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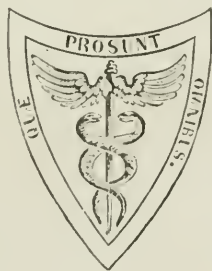
EDITED BY

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THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; MEMBER OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
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TO READERS AND CORRESPONDENTS.

A NUMBER of Communications are on hand which shall receive a respectful consideration when articles are selected for the April number.

All articles intended for the *Original Department* of this Journal must be communicated to it *exclusively*. As original articles are accepted only on this condition, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of February.

Compensation is allowed for original articles, and reviews, *except* when illustrations or extra copies are required. A *limited* number of extra copies will be furnished to authors *if the request for them be made when the communication is sent*. The extensive circulation of this Journal renders extra copies of comparatively little value to authors who desire their observations made known only to their professional brethren.

The following works have been received:—

Traité Expérimental et Clinique de la Régénération des Os et de la Production Artificielle du Tissu Osseux. Par L. OLLIER, Chirurgien en Chef de l'Hôtel-Dieu de Lyon. Avec 9 planches gravées sur cuivre et 15 figures intercalées dans le texte. Tome premier, Partie Expérimentale. Tome second, Partie Clinique. Paris: Victor Masson et Fils, 1867. (From the Author.)

Estudo sobre as HERNIAS Parietaes da Bexiga e sobre os calculos vesicaes encarcerados. Por J. J. DA SILVA AMADO. Premiado pela escola Medico-Cirurgica de Lisboa em 1860-1-3-4, etc. Lisboa: Imprensa Nacional, 1867. (From the Author.)

Illustrations of some of the Principal Diseases of the Eye, with a brief account of their Symptoms, Pathology, and Treatment. By HENRY POWER, F.R.C.S., M.B. Lond., Surgeon to the Royal Westminster Ophthalmic Hospital, &c. &c. London: John Churchill & Sons, 1867. (From the Author.)

On Hay Asthma, and the affection termed Hay Fever. By WILLIAM PIRRIE, M.D., &c. &c. London: John Churchill & Sons, 1867.

Egypt and the Nile considered as a Winter Resort for Pulmonary and other Invalids. By JOHN PATTERSON, M.D., F.R.C.S., etc. London: John Churchill & Sons, 1867.

Germinal Matter and the Contact Theory: an Essay on the Morbid Poisons, their nature, sources, effects, migrations, and the means of limiting noxious agency. By JAMES MORRIS, M.D. Lond., F.R.C.S., Fellow of University College. Second Edition. London: John Churchill & Sons, 1867.

Lectures on the Progress of Anatomy and Surgery during the present century. By SIR WILLIAM FERGUSSON, Bart., F.R.S., F.R.C.S., Sergeant Surg. to H. M. the Queen, Prof. Surg. in King's College, London, etc. London: John Churchill & Sons, 1867.

On the Distinctive Characters of External Inflammations, on Inflammatory or Sympathetic Fever, and the results of thirty-six years' experience of the effects of Bleeding, ascertained from private practice only. By J. H. JAMES, F.R.C.S., &c. &c. &c. London: John Churchill & Sons, 1867.

A Practical Treatise upon Eczema, including its Lichenous and Impetiginous Forms. By DR. MCCALL ANDERSON, Lecturer on Practice of Medicine in Anderson University, Physician to the Dispensary for Skin Diseases, etc. Glasgow. Second Edition. London: John Churchill & Sons, 1867.

Injuries of the Eye, Orbit, and Eyelids: their immediate and remote Effects. By GEORGE LAWSON, F.R.C.S. Eng., Asst. Surg. to the Royal London Ophthalmic Hospital, Moorfields, and to the Middlesex Hospital. London: Longmans, Green & Co., 1867.

Nutrition the Basis of the Treatment of Disease: The Introductory Address at the opening of the Medical Session at University College, London, October 1, 1867. By GRAILEY HEWITT, M.D. Lond., F.R.C.P., Prof. Midwifery and Diseases of Women and Children in University College, etc. etc. London: Longmans, Green & Co., 1867.

Report on Leprosy by the Royal College of Physicians, prepared for Her Majesty's Secretary of State for the Colonies; with an Appendix. London, 1867. (From the Royal College of Physicians, London.)

Saint Bartholomew's Hospital Reports. Edited by DR. EDWARDS and MR. CALLEDER. Vol. 3. London: Longmans, Green & Co., 1867.

St. George's Hospital Reports. Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. 2. London: John Churchill & Sons, 1867.

Transactions of the Epidemiological Society of London. Vol. II. Part II. Sessions 1864-5 and 1865-6. London: Robert Hardwicke, 1867.

On the Physiological Action of the Calabar Bean (*Physostigma Venenosum*, Balf). By THOMAS R. FRASER, M. D., Asst. to the Professor of Materia Medica in Univ. of Edinburgh. Edinburgh, 1867. (From the Author.)

Synopsis of the course of Lectures on Materia Medica and Pharmacy, delivered in the Univ. of Penn.; with five lectures on the *Modus Operandi* of Medicines. By JOSEPH CARSON, M. D. Fourth edition, revised. Philadelphia: Henry C. Lea, 1867.

Lectures on Diseases of Women. By CHARLES WEST, M.D., F.R.C.P. Examiner in Midwifery at Univ. of Lond., Phys. to Hospital for Sick Children, etc. etc. Third American from the third and revised English Edition. Phila.: Henry C. Lea, 1867.

Mechanical Therapeutics. A Practical Treatise on Surgical Apparatus, Appliances, and Elementary Operations: embracing Bandaging, Minor Surgery, Orthopraxy, and the Treatment of Fractures and Dislocations. By PHILIP S. WALES, M. D., Surgeon U. S. N. With 642 illustrations. Philadelphia: Henry C. Lea, 1867.

On Diseases of the Lungs and Air-Passages: their Pathology, Physical Diagnosis, Symptoms, and Treatment. By HENRY WILLIAM FULLER, M. D. Cantab., F.R.C.P. Lond.; Physician to St George's Hospital, etc. etc. From the second and revised London edition. Philadelphia: Henry C. Lea, 1867.

A Practical Treatise on the Diseases of Children. By D. FRANCIS CONNIE, M. D., Fellow of the Coll. Phys.; Member of Am. Philosophical Society, etc. Sixth edition revised and enlarged. Philadelphia: Henry C. Lea, 1868.

On the Signs and Diseases of Pregnancy. By THOMAS H. TANNER, M. D., F.L.S., etc. From the Second and enlarged Lond. edition, with four coloured Plates and Illustrations on wood. 1 vol. 8vo. Phila.: Henry C. Lea, 1868.

Epidemic Meningitis, or Cerebro-Spinal Meningitis. By ALFRED STILLÉ, M. D., Prof. of the Theory and Practice of Medicine and of Clinical Medicine in the University of Penn., etc. etc. Phila.: Lindsay & Blakiston, 1867. (From the Author.)

Hufeland's Art of Prolonging Life. Edited by ERASMUS WILSON, F.R.S., etc. From the last London edition. Philadelphia: Lindsay & Blakiston, 1867.

The Practice of Medicine and Surgery applied to the Diseases and Accidents incident to Women. By WM. H. BYFORD, A M., M. D., Prof. of Obstetrics in Chicago Med. College. Second edition, enlarged. Philadelphia: Lindsay & Blakiston, 1867.

Headaches: their Causes and their Cure. By HENRY G. WRIGHT, M. D., M.R.C.S.L., &c. From the Fourth London edition. Philadelphia: Lindsay & Blakiston, 1867.

Inhalation: its Therapeutics and Practice. A Treatise on the Inhalation of Gases, including a description of the Apparatus employed, etc., with cases. By J. SOLIS COHEN, M. D. Illustrated. Philadelphia: Lindsay & Blakiston, 1867.

A Practical Treatise on Shock after Surgical Operations and Injuries: with especial reference to Shock caused by Railway Accidents. By EDWIN MORRIS, M. D., F.R.C.S., etc. etc. Philadelphia: J. B. Lippincott & Co., 1868.

A Treatise on Therapeutics and Pharmacology, or Materia Medica. By GEORGE B. WOOD, M. D., President of the American Philosophical Society and of the College of Physicians of Philadelphia; Emeritus Professor of the Theory and Practice of Medicine in University of Pennsylvania, etc. etc. Third edition. In two volumes. Philadelphia: J. B. Lippincott & Co., 1868. (From the Author.)

Studies in Pathology and Therapeutics. By SAMUEL HENRY DICKSON, M. D., LL.D., Professor of Practice of Physic in Jefferson Medical College, Philadelphia, etc. etc. New York: William Wood & Co., 1867. (From the Author.)

The Principles and Practice of Laryngoscopy and Rhinoscopy in Diseases of the Throat and Nasal Passages. Designed for the use of Physicians and Students, with 59 engravings on wood. By ANTOINE RUPPNER, M. D., M. A., Memb. Am. Med. Assoc.; of Mass. Med. Soc., etc. New York: A. Simpson & Co., 1868.

Observations on the Nature and Treatment of Polypus of the Ear. By E. H. CLARKE, M. D., Prof. Mat. Med. in Harvard University, etc. Boston: Ticknor & Fields, 1867.

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Circular No. 7, War Department, Surg.-General's Office. A Report on Amputations at the Hip-Joint in Military Surgery. Washington, 1867. (From the Surg.-General.)

Photographs of Diseases of the Skin, taken from life, under the superintendence of HOWARD F. DAMON, A.M., M.D., Fellow of Mass. Med. Soc., etc. Series I. Nos. 1, 2, 3, 4. Boston: James Campbell, 1867.

The Physicians' Hand-Book, for 1868. By WILLIAM ELMER, M. D. New York: W. A. Townsend & Adams, 1868.

Homicide—Epilepsy. By I. RAY, M. D. (From the Author.)

How far do the facts accompanying the prevalence of Epidemic Cholera in Chicago, during the summer and autumn of 1866, throw light on the Etiology of that Disease?

By N. S. DAVIS, M. D., Prof. Principles and Practice of Medicine, and of Clinical Medicine, Chicago, Ill.

Progress in School Discipline. Corporal Punishment in the Public Schools. By MORRILL WYMAN, M. D. Cambridge, 1867. (From the Author.)

Annual Address before the Medical Society of the State of New York, February 6th, 1867. By JOSEPH C. HUTCHINSON, M. D., of Brooklyn, President. Albany, 1867.

Then and Now: a Discourse Introductory to the Forty-third course of Lectures in the Jefferson Medical College of Philadelphia. By S. D. GROSS, M. D., Professor of the Principles and Practice of Surgery. Philadelphia, 1867. (From the Author.)

Salutatory to the Class of the Medical College of Ohio, delivered October 1, 1867. By W. H. GONRECHT, M. D., Professor of Anatomy. Cincinnati, 1867.

Address of Prof. SILAS L. LOOMIS, M. D., at the opening of the 19th Annual Course of Lectures of the Med. Depart. Georgetown Coll., Oct. 15, 1867. Washington, 1867.

Report of the Proceedings of the Association of Medical Superintendents of American Institutions for the Insane, 1867. Harrisburg, 1867.

Twelfth Annual Report upon the Births, Marriages, and Deaths in the city of Providence, for the year 1866. By EDWIN M. SNOW, M. D., Supt. of Health, and City Registrar. Providence, 1867. (From the Author.)

Annual Report of the Surgeon-General United States Army, 1867.

Report of the Secretary of the Navy, with Bureau Reports, etc., December, 1867. Washington, 1867. (From P. J. Horwitz, Chief of Bureau of Med. and Surg.)

Transactions of the American Med. Association. Vol. XVIII. Philadelphia, 1867.

Transactions of the Medical Society of the State of Pennsylvania at its Eighteenth Annual Session, June, 1867. Published by the Society. Philadelphia, 1867.

Transactions of the Twenty-second Annual Meeting of the Ohio State Medical Society, held at Yellow Springs, Ohio, June 11th and 12th, 1867. Cincinnati, 1867.

Seventeenth Anniversary Meeting of the Illinois State Medical Society, held in Springfield, June 4th and 5th, 1867. Chicago, 1867.

Proceedings of the Academy of Natural Sciences of Philadelphia, June, July, Aug., Sept., 1867.

The following Journals have been received in exchange:—

Revue de Thérapeutique Médico-Chirurgicale. Par A. MARTIN-LAUZER, M. D. Nos. 18, 19, 21, 22, 23. 1867.

Annales Médico-Psychologiques. Par MM. les docteurs BAILLARGER, CERISE et LUNIER, May, July, 1867.

Le Mouvement Médical Journal de la Santé Publique. Rédacteur-in-Chief, N. PASCAL, Nos. 42, 43, 44, 46, 47.

Giornale Italiano Delle Malattie Veneree e Delle Malattie Della Pelle. Compilato e Diretto dall dott. G. B. SORESINA, Ispettore Sanatorio di Milano. Fascicolo 6, 7, 8, 9, 10, 11. 1867.

The British and Foreign Medico-Chirurgical Review. Oct. 1867.

The Medical Times and Gazette. October, November, December, 1867.

The British Medical Journal. Nos. 349—361. 1867.

The Journal of Anatomy and Physiology. Conducted by G. M. HUMPHRY, M. D., F. R. S., Prof. of Anatomy in University of Cambridge, and WM. TURNER, M. B., F. R. S. E., Prof. of Anatomy in University of Edinburgh, November, 1867.

Dublin Quarterly Journal of Medical Science. August, November, 1867.

Edinburgh Medical Journal. September, October, November, 1867.

The Glasgow Medical Journal. October, November, December, 1867.

Journal of Cutaneous Medicine and Diseases of the Skin. Edited by ERASMUS WILSON, F. R. S. Oct. 1867.

The Ophthalmic Review. Edited by J. ZACHARIAH LAURENCE. October, 1867.

The Medical Mirror. October, November, December, 1867.

Medical Press and Circular. September, October, November, 1867.

The Madras Quarterly Journal of Medical Sciences, Oct. 1866; Jan., June, 1867.

Canada Medical Journal. Edited by G. E. FENWICK, M. D., and F. W. CAMPBELL, M. D. August, September, October, November, December, 1867.

The Boston Medical and Surgical Journal. Edited by SAMUEL ABBOT, M. D., and LUTHER PARKS, Jr., M. D. October, November, December, 1867.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. October, 1867.

The Cincinnati Lancet and Observer. Edited by EDWARD B. STEVENS, M. D., and JOHN A. MURPHY, M. D. October, November, December, 1867.

- The St. Louis Medical and Surgical Journal. Edited by M. L. LINTON, M. D., and FRANK W. WHITE, M. D. November, December, 1867.
- The New York Medical Journal. Edited by WM. A. HAMMOND, M. D., and E. S. DUNSTER, M. D., September, October, November, December, 1867.
- The Medical Record. October, November, December, 1867.
- The Medical Gazette, October, November, December, 1867.
- The Quarterly Journal of Psychological Medicine and Medical Jurisprudence. Edited by WILLIAM A. HAMMOND, M. D. October, 1867.
- The Buffalo Medical and Surgical Journal. Edited by JULIUS F. MINER, M. D. September, October, November, 1867.
- The Medical and Surgical Reporter. Edited by S. W. BUTLER, M. D., and D. G. BRINTON, M. D. October, November, December, 1867.
- The Chicago Medical Examiner. Edited by N. S. DAVIS, M. D. August, September, November, December, 1867.
- The Chicago Medical Journal. October, November, 1867.
- The Iowa Medical Journal. Edited by J. C. Hughes, M. D., Nov., Dec., 1867.
- The Western Journal of Medicine. Edited by THEOPHILUS PARVIN, M. D. October, November, December, 1867.
- The Saint Louis Medical Reporter. Edited by J. S. B. ALLEYNE, M. D., and O. F. POTTER, M. D. October, November, December, 1867.
- The Detroit Review of Medicine and Pharmacy. Edited by G. P. ANDREWS, M. D., E. W. JENKS, M. D., and THEO. A. MCGRAW, M. D., September, October, 1867.
- The Richmond Medical Journal. Edited by E. S. GAILLARD, M. D., and W. S. MCCHESENEY, M. D. November, 1867.
- Atlanta Medical and Surgical Journal. Edited by J. G. WESTMORELAND, M. D., and W. F. WESTMORELAND, M. D. October, November, 1867.
- Southern Journal of Medical Sciences. Edited by D. WARREN BRICKELL, M. D., C. BEARD, M. D., and W. S. MITCHELL, M. D. November, 1867.
- The Nashville Journal of Medicine and Surgery. Edited by W. K. BOWLING, M. D. October, November, 1867.
- The Galveston Medical Journal. Edited by GREENSVILLE DOWELL, M. D. August, September, November, 1867.
- The Pacific Medical and Surgical Journal. Edited by HENRY GIBBONS, M. D., and HENRY GIBBONS, Jr., M. D. September, October, November, 1867.
- The Humboldt Medical Archives. Edited by Drs. A. HAMMER and M. A. PALLÉN. November, 1867.
- The Leavenworth Medical Herald. Edited by C. A. LOGAN, M. D., and T. SINKS, M. D. September, October, November, December, 1867.
- The New Orleans Medical and Surgical Journal. Edited by Drs. WARREN STONE, JAMES JONES, S. S. HERRICK and STANFORD E. CHAILLE, September, 1867.
- The American Journal of Pharmacy. Published by Authority of the Philadelphia College of Pharmacy. Edited by WM. PROCTER, Jr. November, 1867.
- The Druggists' Circular and Chemical Gazette. Oct., Nov., Dec., 1867.
- The Journal of Materia Medica. Conducted by JOSEPH BATES, M. D., and H. A. TILDEN. September, November, 1867.
- The American Journal of Science and Arts. November, 1867.
- The American Naturalist. December, 1867.
- The Dental Cosmos. Edited by J. H. MCQUILLEN, D. D. S., and GEORGE J. ZIEGLER, M. D. November, December, 1867.
- The American Journal of Dental Science. Edited by A. SNOWDEN PIGGOT, M. D., and F. G. S. GORGAS, M. D., D. D. S. October, November, December, 1867.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London; or M. Hector Bossange, Lib. quai Voltaire, No. 11, Paris, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

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- Experimental and Clinical Treatise on the Regeneration of Bones, and on the Artificial Production of Bony Tissue. By L. Ollier, Surgeon-in-chief to the Hôtel-Dieu of Lyons; with plates and woodcut. Two volumes royal 8vo. 140
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2. Catalogue of the U. S. Army Medical Museum. Prepared under the direction of the Surgeon-General U. S. Army. By Assistant Surgeons Alfred A. Woodhall, J. J. Woodward, and Edward Curtis, U. S. Army, 4to. pp. 961. Washington : Government Printing Office, 1867.	
3. A Contribution to the History of Hip-Joint Operations Performed during the late Civil War. Being the Statistics of Twenty Cases of Amputations and Thirteen Resections at this Articulation in the Southern Service. By Paul F. Eve, M. D., Professor of Surgery in the University of Nashville. Pamphlet reprint. 8vo. pp. 17. Philadelphia : Collins, 1867.	211
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THE
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ART. I. — *Description of two New Algoïd Vegetations, one of which appears to be the Specific Cause of Syphilis, and the other of Gonorrhœa.* By J. H. SALISBURY, M. D. (With sixteen illustrations.)

I. *Syphilis*.—The specific cause of syphilis attacks especially those histological elements, the characteristic, proximate, organic principle of which is either gelatine, osteine, or chondrin. These are connective tissue proper, bone, and cartilage. It first attacks the connective tissue at the points of inoculation, and next the connective tissue of the lymphatic glands, in the vicinity of the primary lesion. After the primary sore or sores have healed, the specific cause may remain, apparently, dormant in the system, for from a few days to some months, or even years. It may then show itself in blotches over a part or the whole surface of the body, resulting frequently in hard swellings of the connective tissue,¹ which may or may not be followed by a breaking down of the histological elements involved. Sooner or later the poison may attack the periosteal and perichondrial membranes, especially in those parts of the body where they are covered but thinly by the softer tissues. From the periosteal and perichondrial membranes the lesions extend to bone and cartilage.

The primary sores represent the primary disease. The lesions of the connective tissue of the lymphatic glands and loose connective tissue of the body, which accompany or immediately follow the primary sore, indicate that the poison has permeated the system. These may be called the primary constitutional disturbances, to distinguish them from the primary local lesions at the point or points of inoculation.

¹ These swellings are caused by a too rapid development of the glue tissue cells, excited by the active growth among them of the *Crypta syphilitica*.

After an interval of longer or shorter duration, following the primary manifestations, the sub-epidermic and sub-mucous connective tissues begin to show signs of invasion in the shape of blotches, mucous patches, tumours, condylomata, &c. These disturbances are called secondary. Following the secondary manifestations, at a more or less remote period, the periosteal and perichondrial membranes, and the bony and cartilaginous tissues become involved. The invasion of these last-named tissues marks the tertiary stage of the disease.

With these few prefatory remarks I will proceed to briefly narrate the results which I have arrived at by long-continued, patient, and careful labour. It is possible that I over-estimate what I have found, but whether I do or not, time and careful investigation only can determine.

My microscopic examinations, connected with syphilis, were commenced in 1849. It was not, however, till the winter of 1860 that I made any satisfactory progress, for plants of this character had been but little studied, on account of their habitat, their resemblance to connective-tissue filaments, and their extreme minuteness. From the commencement of my microscopic studies I have made it a rule to figure and describe every new body, and to note all the circumstances connected therewith likely to be of interest. By following this course patiently, although it has been a work of labour, yet it has made me familiar with the genesis and habits of a large class of minute organisms which are almost entirely unknown to science, and which, I conceive, have an important bearing upon disease.

The *Crypta syphilitica* is one of these minute organisms. No substantial progress was made in my investigations so long as I was examining the pus alone. This seems to have been an almost barren field. The only thing found that seemed to be foreign to pus from other sores, was a small, highly refractive sporoid body, which subsequent discoveries demonstrated to be the spore of the *Crypta syphilitica*. In studying this minute form, I was led to dissect out the bed of chancres, and subject them to careful microscopic examination, when I soon discovered a peculiar filament, running in all directions, singly and in bundles, through and among the diseased connective-tissue elements. This organism was soon determined to be algoid. It was found in multitudes, in all stages of development, from the spore to the mature filament (figs. 1 to 5). Up to the present time, I have carefully worked up over one hundred cases in this way, dissecting out the base of the primary sore, and have uniformly found this vegetation; and what is still more interesting, this same vegetation shows itself in the blood so soon as the disease becomes constitutional. Its presence or absence in the blood is believed to be a sure guide for continuing or discontinuing treatment.

The filaments, as they occur in the blood, are more highly refractive, and have the peculiar obtusely rounded extremities, in a more marked degree, than those found in the beds of the primary sores. Both are,

however, equally homogeneous throughout. The filaments in the blood are frequently found united at one end in bundles, while they radiate at the other in more or less rigid uniform curves. This vegetation has a peculiar tendency to develop in connective tissue, cartilage, and bone. When once planted in the organism, it has a tendency to remain either in a partially dormant or in an active state, till removed by remedial means. It seemingly may remain in the system, under certain conditions, for years, or a lifetime, without producing any serious trouble; or it may, if circumstances are present that favour its development, produce grave and continued disease and suffering. Under favourable states of the system, the tendency seems to be for the vegetation to gradually lessen; and probably, in some few instances, it may eventually entirely disappear. This vegetation may be transmitted from one individual to another, during the secondary and tertiary stages, under the proper conditions, without producing the primary disease. I have noticed many instances in which the father having had the disease previous to marriage and where the poison was not entirely eliminated, even though no outward manifestations of the disease had shown itself in him after marriage, this vegetation was transmitted to, and found in the blood of the wife and children many years after. In many cases of this kind, this vegetation produces no visible impression upon the systems to which it is transferred; while, upon others, it produces more or less marked constitutional disturbance.

Genus. CRYPTA (Salisbury).—Minute, transparent, highly refractive algoid filaments, which develop in living organic matter from spores.

Species. C. *Syphilitica* (Salisbury).—A homogeneous filament, with extremities obtusely rounded. The filaments are of such uniform structure throughout that no trace of transverse markings are visible save in their early stage of development; neither can the contents be distinguished from the outside wall of the filament. The filaments are either straight, coiled, or arranged in curves. They develop from spores, which may be active or inactive in the connective tissue, and may be transplanted from one individual to another by inoculation, or by contact with mucous membranes. They are believed to produce the disease known as syphilis. The connective tissues, in their various modifications, furnish a fertile soil for the development and propagation of this plant. When the spores are planted on a mucous surface, they vegetate, the filaments making their way through the basement membrane, instead of extending laterally in the epithelial tissue. The epithelial tissue, in the primary disease, is only destroyed immediately over where the plants first penetrate the glue tissue beneath.

The following is a brief report of a few cases selected from my notebook. The illustrations are drawn from the plants and spores found in the cases here given. I have a great number of other cases of like character recorded, but those given will suffice for the present:—

CASE I.—Mr. H. B., æt. 28, strong, robust man; called Nov. 9, 1865; labouring under primary syphilis. Never has had the disease before; has a large chancre on the penis, just back of the glans. Eighteen days since exposure, and six since the disease first made its appearance. Cauterized with the liquid penitrate of mercury, and twelve hours after removed the dead tissue produced by cauterizing. On teasing this out carefully, and placing it under the microscope, discovered a large number of alloid filaments (*C. syphilitica*, fig. 5), many of them very long and variously coiled, and running in an irregular, zigzag manner in every direction among the connective tissue elements. These filaments were highly refractive, transparent, and homogeneous throughout, having no perceptible transverse markings, or line of demarcation between the outer wall and contents. The filaments were of uniform diameter throughout, and had the peculiarity of having abrupt extremities. The spores (fig. 1), and embryonic filaments (figs. 2, 3, 4) were found in multitudes everywhere through the diseased tissue. The glands in the groin were slightly enlarged and tender. Examined the blood carefully; could find no trace of the filaments or spores of the *C. syphilitica*. Prescribed as follows:—R.—Dilute citrine ointment ʒj; Venice turpentine ʒij—M. S.—Apply to chancre morning, noon, and night, after carefully washing. R.—Potass. iodid. ʒvj; tr. cinchona comp. ʒvj; sulphur ʒiij.—M. S.—Take a teaspoonful before each meal. R.—Acid. nitro-muriatic. dil. ʒvj; quiniæ sulphat. ʒiij.—M. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night on retiring, and wipe dry after. R.—Pil. hydrarg. prot. iodid. $\frac{1}{4}$ gr. each, No. xxx. S.—Take a pill two hours after each meal. R.—Potass. acetat. ʒjss; potass. nitrat. ʒss; aq. camphor. ʒvij.—M. S.—Take a tablespoonful in a glass of water at night on retiring.

On the eighth day after cauterizing, the chancre was entirely healed, and glandular enlargements in groin nearly gone. On examining the blood carefully again, I found the spores and short filaments of the *C. syphilitica* in it in considerable quantity. Continued the treatment for two weeks more; then dropped the mercurial, and gave in its place a two-grain quinia pill, and twenty drops of tr. ferri chlorid. in a full glass of water.

This treatment was continued, with slight variation, for a little over two months, at which time no trace of the *C. syphilitica* could be discovered in the blood. The iron and quinia are believed to have an important influence in preventing this vegetation from producing spores, and in checking the development of the filaments from spores, from the fact that by the free use of these agents with the ordinary treatment, this vegetation disappeared much more rapidly than when they were not used. They have this effect upon the vegetation of intermittent fever, and they also rapidly destroy the *Zymotosis translucens*, which is so abundantly present in anæmia, in tubercular conditions, and in inflammatory rheumatism.

CASE II.—Mr. K. called April 7, 1867; age, 33; a strong, powerfully-built man, weighing about 185 pounds. Had syphilis about three years previous; since then has had more or less secondary and tertiary trouble, in the shape of mucous patches and wandering pains, especially in shin-bones and front part of cranium. Is low-spirited, languid, and has an uneasy feeling about the heart, with palpitation on excitement. Blood contains the *C. syphilitica* in considerable quantity. The specimen, Fig. 6, was found in the blood of this patient. It is unusual to find so long a filament in the blood, and one so evenly coiled. The blood also contains

considerable cystine and stellite. Placed him on the following treatment : R.—Pil. hydrarg. prot. ioidid. $\frac{1}{4}$ gr. each, No. xxx. S.—Take a pill two hours after each meal. R.—Sulphur $\mathfrak{z}$ ij; potass. ioidid. $\mathfrak{z}$ vj; potass. bromid. $\mathfrak{z}$ ij; wine colchicem (seeds) $\mathfrak{z}$ j; tr. cinchona comp. $\mathfrak{z}$ vj.—M. S.—Take a teaspoonful before each meal. R.—Quiniæ sulph. $\mathfrak{z}$ ijss; acid. nitro-mur. dilut. $\mathfrak{z}$ vj.—M. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night on retiring, and wipe dry afterwards. Continued this treatment for four weeks. I then dropped the hydrarg. prot. ioidid., and gave in its place a two-grain quinia pill and twenty drops of tr. ferri chlorid. in a glass of water, two hours after each meal. Under this treatment he improved rapidly. He is still taking the medicine. Lives on plain diet, avoiding all sweets, acids, and stimulants. Blood at the present writing (July 27, 1867) is almost entirely free from the spores and filaments of the *C. syphilitica*, the mucous patches and pains and aches are all gone, and he feels well.

CASE III.—Mrs. K. called for treatment May 1, 1867; age, 36; pale, anæmic, and feeble; has not had her courses for four months; has been sick for the last four years. Does not know that she has had syphilis, and hence did not question her so as to excite suspicions. Found that in the early part of her sickness she had severe ulceration of womb and vulva, with swellings in groin, and considerable leucorrhœa, for which she was treated locally. About three months after this, blotches appeared over the whole body; these were followed by hard swellings, many of which resulted in sores. Her month and throat were ulcerated and very sore. These manifestations of secondary trouble gradually passed away under treatment. At the time of her visit to me the surface of the body was smooth, but had a few mucous patches on roof of mouth and in fauces. Had a severe cough, with pains in chest, heart, back, and limbs. For the last two years has raised some blood from lungs at different times. Before raising blood, would get hoarse, have a chill, followed by fever, which was accompanied by the raising of blood. Blood thin and watery, and contained many spores and rigid filaments of the *C. syphilitica*. The plants and spores represented in Fig. 7 were figured from specimens found in the blood of this patient; they were present in all stages of development. Placed her under the following treatment : R.—Dilute citrine ointment $\mathfrak{z}$ jss; Venice turpentine $\mathfrak{z}$ ss.—M. S.—Apply to sores morning, noon, and night. R.—Quiniæ sulph. $\mathfrak{z}$ ij; acid. nitro-mur. dilut. $\mathfrak{z}$ vj.—M. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night on retiring, and then wipe dry. R.—Potass. ioidid. $\mathfrak{z}$ vj; tr. cinchona comp. $\mathfrak{z}$ vj; sulphur $\mathfrak{z}$ ij.—M. S.—Take a teaspoonful before each meal. R.—Pil. hydrarg. prot. ioidid. $\frac{1}{4}$ gr. each, No. xxx. S.—Take a pill two hours after each meal. R.—Potass. acetat. $\mathfrak{z}$ jss; potass. nitrat. $\mathfrak{z}$ ss; ammon. hydrochlor. $\mathfrak{z}$ ij; aq. camphor. $\mathfrak{z}$ vj.—M. S.—Take a teaspoonful in a glass of water night and morning. She improved rapidly till she left town, about six weeks after she first called. Ordered her to continue the medicine. The last I heard from her she was progressing finely.

CASE IV.—Mr. E., miller, called May 7, 1867. Has secondary and tertiary syphilis. The septum of nose is entirely eaten away, and the parts ulcerating and offensive. Is very hoarse; scarcely able to speak so as to be understood. Tonsils and fauces covered with ulcerating patches. Has severe neuralgic pains in forehead, and suffers much with deep-seated aches in shinbones. Blood full of the filaments and spores of the *C. syphilitica*.

The mass of filaments and spores, represented at Fig. 8, is from the blood of this patient. Placed him on the following treatment: R.—Pil. hydrarg. prot. ioidid. $\frac{1}{4}$ gr. each, No. xxx. S.—Take a pill two hours after each meal. R.—Potass. ioidid. $\mathfrak{z}$ vj; tr. cinchona comp. $\mathfrak{z}$ vj; sulphur $\mathfrak{z}$ ij.—M. S.—Take a teaspoonful before each meal. R.—Quiniæ sulph. $\mathfrak{z}$ ij; acid. nitro-mur. dil. $\mathfrak{z}$ vj.—M. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night on retiring, and then wipe dry. R.—Tr. iodinii $\mathfrak{z}$ jss. S.—Paint over temples, back of ears and neck, and over shins every day. R.—Dil. citrine ointment $\mathfrak{z}$ j; Venice turpentine $\mathfrak{z}$ ijss.—M. S.—Apply to nasal cavity with a soft brush every morning, noon, and night. Ordered the patient to inhale from an atomizing apparatus every morning the following: R.—Tr. iodinii $\mathfrak{z}$ j; potass. chlorat. $\mathfrak{z}$ ij; potass. nitrat. $\mathfrak{z}$ ij; tr. conium $\mathfrak{z}$ ij; tr. cimicifugæ rac. $\mathfrak{z}$ j; aq. camphor. $\mathfrak{z}$ xv.—M. S.—Inhale an ounce every evening. Continued this treatment till the neuralgic pains ceased, and then omitted the mercurial, and gave two grains of quinia and twenty drops of tr. ferri chloridi in a full glass of water two hours after each meal. Under this treatment the patient has slowly but steadily improved. The nose, throat, and fauces are well, no blotches on the surface, and the blood is almost entirely free from the *C. syphilitica* (July 27, 1867). In addition to the foregoing treatment, I gave to this patient, to keep up free elimination and to allay febrile symptoms, the following: R.—Potass. acetat. $\mathfrak{z}$ jss; potass. nitrat. $\mathfrak{z}$ ss; ammon. hydrochlor. $\mathfrak{z}$ ij; aq. camphor. $\mathfrak{z}$ vij.—M. S.—Take a tablespoonful in a glass of water at night on retiring.

II. *Gonorrhœa*.—The epithelial tissue seems to be the only one properly adapted for the development and propagation of the specific poison of gonorrhœa. That portion of this tissue peculiarly susceptible to the disease is the mucous membranes. The parent cells of these surfaces, and especially those of the urinary and genital organs and eye, afford all the necessary conditions for the growth and multiplication of the cause. If once planted here, it extends from cell to cell, if not prevented by remedial means, till it has invaded all the mucous surfaces in continuity with each other. That the gonorrhœal virus multiplies rapidly under the proper conditions, like the lower cryptogams, has long been noticed.

As long ago as 1850, I first discovered in gonorrhœal pus minute spore-like bodies, multiplying by duplicative segmentation in and out of the cells. Although I figured these bodies accurately at that time, I was not sufficiently familiar with these minute cryptogams to determine either their place or significance.

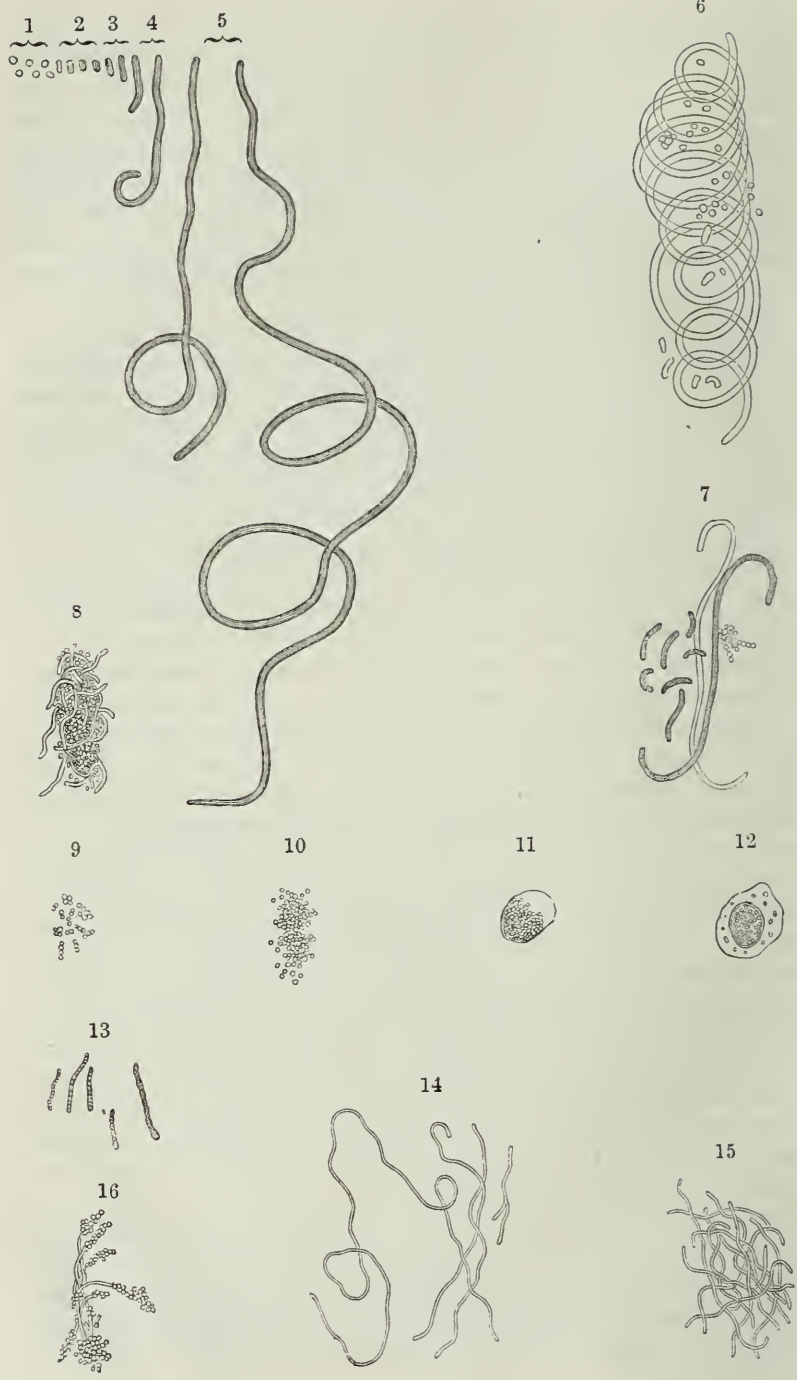
After having discovered the *Crypta syphilitica* in the beds of chancres, I was led to examine carefully the tissue invaded by gonorrhœa. Selecting such cases of the disease as had not been subjected to treatment, and where the discharge was copious and the inflammation severe, the patients were directed first to void their urine; the lips of the meatus were then separated, and with the clean edge of a small scalpel I scraped the epithelium from the orifice of the urethra, and placed the scrapings between the slides of the microscope. The specimens thus obtained were each examined carefully, often for many hours together, watching the changes produced by

gradual drying, and making accurate notes of all the abnormal bodies and appearances present. I had not pursued this mode of inquiry long, before I discovered the spores (fig. 9) which I had previously found in the pus scattered about among and in the parent epithelial cells, and here and there found filaments, single and in little knots, in all stages of development. These filaments were soon discovered to emanate from the minute spores previously mentioned. In the embryonic filaments (fig. 13) a moniliform structure could be observed, exhibiting the outlines of the individual spores, while the more advanced and mature filaments were usually homogeneous throughout their entire length (figs. 14 and 15).

From 1862 to the present time I have worked up carefully several hundred cases in this way, and have made careful drawings, with full notes. In all of these cases this peculiar vegetation has been found: in some cases the spores only; in others, the spores and embryonic filaments; and in still others, the spores and filaments in all stages of development were found. Believing this plant to be the specific cause of gonorrhœa—not being able to find it in mucous membranes affected with other inflammatory derangements—I have given it the name *Crypta gonorrhœa*.

The spores (figs. 9 and 10) are very minute and well defined. They are often discovered in twos and sometimes in fours (fig. 9), undergoing the process of duplicative segmentation. They occur and develop rapidly, in gonorrhœa, in and among the parent cells of the mucous surfaces affected, producing great irritation and inflammation, and a rapid formation of *mucopus* cells, which often form around the spores, and thus become vehicles for eliminating the virus from the parent cells. In this way nearly every particle of gonorrhœal discharge becomes loaded with the specific cause. The spores are represented at figs. 9, 10, 11, and 12. At fig. 12 they are developing in the nucleus of a parent epithelial cell. In and among the epithelial cells this plant is frequently met with in its filamentous stage of development. The filaments are found in all stages of growth, from a length double the diameter of a spore to several inches, when magnified four or five hundred diameters (fig. 14). In their embryonic stages, frequently a moniliform arrangement may be noticed (fig. 13). In later and more advanced stages of development they are usually homogeneous throughout their entire length, no transverse markings being visible (figs. 14 and 15). The outlines of the filaments are generally well defined. They occur either singly or in little knots, running a more or less tortuous course. The filaments are represented at figs. 13, 14, 15, and 16. At fig. 16 the filaments are covered with spores. This is an unusual occurrence.

In some instances the pus-cells become filled with the spores of this vegetation; the spores destroying the nucleus and cell-granules of the mucus or pus-corpuscle, it becoming simply what appears to be a spore-case or sporangium. These apparent spore-sacs vary from the size of a pus-cell to three, four, and even five times the size. They are represented at fig. 11.



It is an interesting fact that this plant is limited in its invasion to the epithelial tissue, while the *Crypta syphilitica* confines itself mainly to the connective, cartilaginous, and osseous tissues. *This explains why, perhaps, the latter produces constitutional derangements, while the former does not.

DESCRIPTION OF PLATE.

FIG. 1.—Spores of the *Crypta syphilitica*.

2.—Embryonic filaments of same.

3, 4.—Filaments of same farther advanced in development.

5.—Mature plants of the *C. syphilitica* as they appear in the beds of chancres.

6.—Outline of a mature plant regularly coiled. This coiled state of the plant is occasionally found in the blood in old cases. At fig. 6 are also seen spores and embryonic filaments.

7. Mature and embryonic filaments and spores as they appear frequently in the blood.

8.—Knot of embryonic filaments and spores in the blood. This vegetation is sometimes met with in the blood in little knots and masses resembling emboli.

9, 10.—Spores of *C. gonorrhœa*.

11.—Spores of same developing in pus-cell.

12.—Spores of same developing in nucleus of parent epithelial cell.

13.—Embryonic filaments of same.

14, 15.—Advanced and mature filaments of same.

16.—Filaments covered with spores of same.

ART. II.—*On the Production of Reflex Spasms and Paralysis in Birds, by the Application of Cold to Definite Regions of the Skin.* By S. WEIR MITCHELL, M. D., Member of the National Academy of Sciences.

IN the January number of this Journal for 1867, I placed upon record a series of novel researches concerning the influence of extreme cold upon the various central nervous organs. I considered my results as having a double value, first, because they introduced to physiology a new method of examining the nervous system; and, second, because I was enabled, through this means, to discover and investigate certain remarkable phenomena produced by chilling the spinal centres of birds. To these latter facts I desire again to call attention.

On the 11th of May, 1866, Dr. B. W. Richardson, of London, who it seems had been occupied with precisely the same line of investigation as myself, published the first of a series of lectures, in which he repeated and thoroughly confirmed the results I had obtained, while, at the same time, he added very valuable details, and a clear and careful examination of the influence of extreme cold upon nerve trunks—a subject on which I had not touched. While differing from this gentleman as to some of the conclusions at which

he arrives, especially concerning the function of the cerebellum,¹ I find between his results and my own scarcely any discrepancies which may not be justly considered as due to the fact that we employed different agents to bring about the desired end. As to these differences I shall presently have to say a few words before attacking the subject of this present essay; but I should be ungracious were I not to seize the first occasion to thank Dr. Richardson for the courtesy with which he has seen fit to speak of my experiments, and for the generous care with which he has brought my results before an English audience. I may add, that without the aid of his own brilliant and useful method of causing local anæsthesia, I should have been unable to pursue this line of study at all.

Dr. Richardson describes local anæsthesia where ether is used as presenting the following phenomena:—

¹ The chief point on which I differ from my friend, Dr. Richardson, is in regard to the inferences he makes from his experiments and my own, as to the physiological balance of control between the cerebellum and the anterior ganglia of the brain. Accepting Magendie's views that the corpus striatum is endowed with a constant backward-propelling energy, while in the cerebellum resides an opponent influence, he states that freezing the cerebellum gives over the pigeon to the governance of the corpus striatum, and so occasions retrogression; the reverse occurrence following the abeyance of function in the anterior centre. I have always believed that these various phenomena of retrogression—lateral motion, *mouvement de manège*, &c., were due to excitation of parts, and not to annihilation of function; and this view is sustained by the fact that mere punctures, which do not destroy the centres, are competent to occasion the enforced motions. In freezing, Dr. R. observed that the first chilling (stage of preaction) of the cerebellum often gave rise to forward motions. The reaction, after deeper freezing, to backward activity. Now Flourens has shown that irritation of the superficial layer of the cerebellum causes motion forward, and that deeper irritation produces retrogression. Is it not probable that the first slight chilling only reached the outer layers, and so gave rise to the forward motion, whilst the reaction after deep freezing, affecting a larger and less superficial mass of the organ, caused retrogression.

In another place Dr. R. seems to consider that retrogression, as I have mentioned above, is due to temporary suspension of the cerebellar function. I myself have not seen this occurrence while the part was really frozen; indeed, so sudden is the reaction, that you can scarcely be sure, a moment after releasing the bird, that reaction has not begun. On the other hand, it was clear to me that the time of greatest retrogressive movement was coincident with the period of profoundest reaction; so that, whatever view we take, must accept a condition of cerebellar irritation as a part of the explanation of the backward tendencies. In corroboration of these very hastily stated views, I may add, that ablation of the cerebellum does not produce those backward movements which can be obtained by irritation of limited regions of this ganglion; and that the experiments of this present paper seem also to favour the view that, in enforced retrogression, forward motion or lateral movement, the principal element of their production is an irritation which affects some mass or masses of ganglionic matter so as to cause convulsive efforts which are vertiginous in character.

First stage: Temperature 96° F.; sensibility perfect.

Second stage: Preaction; removal of nerve-force; increase of temperature and of vascularity; exalted sensibility.

Third stage: Inertia; no nerve-force; temperature 16° F.; perfect insensibility; solidification of fluids of tissues; no blood.

Fourth stage: Reaction; return of vascularity of paralyzed vessels; increased vascularity and temperature; exalted sensibility; re-solution of fluids of tissue; innervation continued.

Fifth stage: Return to natural state.

All of these stages probably exist in every case of freezing of the tissues in warm-blooded animals; but when rhigolene is employed, the stage of preaction is so brief as almost to defy observation, owing to the great rapidity with which that fluid congeals the part. It differs also from ether in that it freezes less deeply. The former liquid chills so large and deep a portion of tissue, that when freezing begins, there is little obstacle to the process; whilst, with rhigolene, the suddenly congealed layer of skin acts at once as a bad conductor, and interferes with the deeper action which we desire to obtain during the latter stages of the process. Dr. Richardson noticed certain phenomena during the stage of preaction, whilst chilling the spine or brain, which I myself did not observe—possibly because of the speed with which rhigolene acts.

After reading his very interesting lectures, I repeated my experiments, with the view of obtaining the very symptoms of this preactive stage to which he refers; and in this series of observations I was led to notice facts which in themselves are valuable, and which cast a curious light upon some of the most obscure pathological and therapeutical questions of the present day.

If, as I first stated in my former paper, we throw a spray of ether or rhigolene anywhere upon the cervical spine from the skull to the fourteenth vertebra, the bird, on being released, runs forward as if confused and alarmed; then assumes his natural motions; and, after a varying interval, begins to have spells of backward movement, and even of somersaults, alternating with fits of stupor.

Below the fourteenth vertebra, this treatment gives rise, in the same way and time, to attacks of uncertainty of movement, loss of equilibrium, singular stamping motions of the feet, and partial palsy of the legs. All of these symptoms appear to me to belong to the stage of reaction, in which there is excess of blood in the spine, and consequent irritation of this organ. I was, indeed, fortunate enough to get like results by placing on the bare cord a drop of tincture of capsicum, but the congestion and motor phenomena which resulted did not appear for a much longer period of time than under the former process. With these facts as a basis, I began to study the symptoms of Richardson's stage of preaction. In it, as he states when speaking of freezing the cerebrum, the pigeon becomes

excited, and attempts to fly forwards or backwards, the stage of reaction being marked by like phenomena. The point which chiefly attracted my notice in Dr. Richardson's statement was this production of constrained movements so soon after the jet struck the skin. I felt doubtful, on reflection, as to the possibility of the centres being thus early affected by any direct influence of the cold. With this uncertainty in my mind, I sought a decision by the aid of the following experiments, and these led me out upon a more interesting track than that upon which I had at first entered.

Expt. 1.—I threw a jet of rhigolene, for a few seconds, on the cervical region of a well-grown pigeon, long enough to freeze the skin very slightly. The sole effect, at first, was to cause deep and frequent respiration. On releasing the bird it ran about uneasily, and in twenty-five seconds had backward movements. Of course, this was due to reaction only, but I was surprised that the spine should have been chilled enough to occasion a result so well marked.

Expt. 2.—I chilled the skin with rhigolene in the same place without freezing, again producing laboured breathing. Within half a minute the bird began to move backwards. As I now felt sure that the spinal centres could not have been reached by the cold, I secured them from all possible chance of this in the following way:—

Expt. 3.—A fresh pigeon was held by an assistant, Dr. Wilson, while I picked up and held between my thumb and finger a portion of the loose cervical skin. The part which projected above my hold was thus removed at least three-quarters of an inch from the spine, while I lightly froze it with the rhigolene jet. Before releasing the bird, I carefully held the skin until it regained its natural warmth, when I set the pigeon at liberty. To my surprise, it showed, in two or three minutes, the utmost confusion of movement, with finally very perfect backward motions.

In another experiment, like the last in all other respects, I warmed the frozen skin before I let the bird go, but the result was nevertheless identical. I now perceived that the phenomena which could be caused by directly chilling the spine, were to be obtained in a less striking manner, but still very remarkably, by merely chilling or freezing the skin of the back of the neck, and that I had before me one of the most beautiful illustrations of reflex pathological movements which had as yet been discovered.

The next experiments it is needless to relate in full. They were directed towards ascertaining the amount of cold which it was requisite to produce in order to occasion the retrograde actions. I found that while for their best display it was well to freeze the skin, in many cases it was only necessary to chill the surface very lightly to get the effect in a form quite sufficiently clear. The extent to which it is desirable to chill or freeze seemed to be determined solely by the individuality of the pigeon itself, since in some a single flash, so to speak, of the rhigolene would answer, while in others I obtained the retrogressive actions only by intensely freezing the skin, or even, in rare cases, not at all. It was also well worthy of note that in pigeons which did not at first yield the usual movements, several repetitions would occasion them, and that afterwards

they became easy of production. Moreover, as a rule, each successive exhibition appeared to make the pigeon more readily liable to the motions referred to, so that in some cases, which at first required firm freezing to cause the spasms, even the slightest chilling would suffice.

When fully satisfied that the curious enforced movements above described were due merely to reflex effects, and not to any direct chilling of the spine, I proceeded with care to determine the relation between the region of skin frozen or cooled and the form of the resultant phenomena.

Head.—When the skin of the head over the cerebrum is seized between the fingers, and frozen and thawed before releasing it, there are sometimes seen, at the start, irregular and confused movements. These, as a rule, result in stupor so deep that the bird, if carefully handled, may be laid on its back and left without stirring for many minutes. In general, it starts off after the freezing, as though quite well, and in a few minutes falls forward in the stupor described, without other motor symptoms of any remarkable character.

Back and Sides of Neck.—I have already pointed out that chilling or freezing the skin of the posterior neck occasions retrogressive acts. In no case did it give rise to the violent somersaults¹ which follow deep freezing. When the sides of the neck are chilled, the bird, as usual in all cases, exhibits some disorder of the respiratory movements. When released, it is apt to move about uneasily for a time, with much confusion in its motions. In other instances no such symptoms appear, but in all, soon or late, the pigeon is attacked at intervals with fits of enforced lateral walking, occasionally ending in a fall upon the side towards which it moves. Nothing more strange or abrupt than these paroxysms can be conceived of. The bird walks about, plumes his feathers, or eats, and on a sudden, under the overwhelming sway of these morbid impulses, it walks staggering to left or right, as the case may be. Stupor was far more rare than in the freezing of other regions.

Anterior Neck, and Skin over the Crop.—Freezing of the former region in the middle line occasioned retrograde motions. The latter proved to be excessively sensitive, and, owing to the stretching of the thin tissues over the full crop, was at times easily frozen by a single breath of rhigolene-vapour. Freezing the middle line of the crop means, of course, portions of skin on both sides of this line. It gave rise, as in other cases, either to no phenomena for a time, or else to sudden forward motions, and to great confusion in the action of both the legs and the wings. Always, however, the final result was sudden and violent retrogression, and even, in rare instances, backward somersaults. I presume that as freezing in the middle line means, practically, freezing both sides at once, it is fair to consider that we have here a balancing of the two lateral tendencies;

¹ Dr. Richardson did not succeed in causing this effect.

but also there must be the third element of backward tendency, and this must be due to the effect on parts near to the middle line of the body, because this latter movement—that is to say, retrogression—does not follow, as a rule, the chilling of one side of the crop. Lateral freezing of this part occasions, usually, the most remarkable lateral motion towards the unfrozen side. In rare instances, especially when I froze very far from the central line, and low down on the crop, I obtained with motion to the opposite side a marked weakness and dragging of both the wing and the leg on the frozen side.

Breast and Belly.—Freezing of the breast occasioned some irregular, confused motions, and gave rise, a little later, to great general feebleness, staggering forward, and spells of slight stupor. Freezing of the legs caused a singular dancing movement alone. When the skin of the belly was chilled, the phenomena of partial paralysis and forward falling were most conspicuous.

Spine below Cervical Region.—Here the phenomena were just such as follow deep freezing of the dorsal or lumbar spine; that is to say, at first little or no result, but finally singular feebleness of movement, with irregular locomotion, stamping of the feet, and forward falls, but no retrogression in any case.

The general law observed in these various cases of freezing of different parts of the surface is capable of very simple statement. If we make allowance for slight discrepancies, and consider the difficulty of exactly localizing the cold, we shall observe that *in pigeons the chilling of any region of skin occasions just such symptoms as follow the application of deep cold to the spinal region which lies below it.* To this there is the exception of the lateral motions, which I have never caused by chilling the spine, but which perhaps I might produce, could we limit the cold to the sides of the bare spine.

In observing these wonderful instances of reflex spasms, and in noticing the alternate or consequent stupors, I have been led to suspect that the whole group of symptoms might be in their nature epileptiform. In fact, they strikingly recalled to me cases of epilepsy in which it was always possible, during a series of fits, to determine instantly a fresh attack by pinching certain regions of the skin, or, as Brown-Séquard states, by galvanizing portions of the integument. Upon reflection, I remembered that in quadrupeds the best type of epilepsy we can artificially induce is to be occasioned by cutting off the supply of blood to the brain. By this means I hoped in the pigeon to produce, for study, the form of epilepsy to which the bird is liable, and so to be able to compare it with the most violent of the convulsive motions caused by cold.

Expt.—I tied successively the vessels of the neck in a pigeon until I brought on sudden and violent convulsions. These consisted first in wild, irregular move-

ments, and finally in backward somersaults, which ceased when I relaxed the ligatures, and began again when I tightened them anew.

By repeated experiments of this nature I satisfied myself that the tendency of the pigeon during epilepsy from anæmia is towards violent backward motion, so that, as far as this may be looked upon as evidence, there is at once made out a conspicuous resemblance between the spasms from cold and those just described.

As I have utterly failed to evolve like phenomena in quadrupeds, I am not prepared to dwell upon some of the tempting analogies between the facts above described and those with which human pathology furnishes us. The most remarkable would be the production of paraplegia or of tetanus in man by the application of cold to the surface. Both here and in the bird it is probable that a congestion of the spinal centres has to do with the result, but in the bird there are always, with the feebleness, larger evidences of irritation of these ganglia than in the cases of human paraplegia from chill of surface. I have great hopes that further research may determine the possibility of producing in quadrupeds like phenomena, and until then it were perhaps wiser to refrain from further speculation.

There yet remains one very puzzling question. I have been totally unable to occasion any of the phenomena which I have dwelt upon by chilling or freezing the skin with ether. Why this should be, I cannot say. Both Dr. Richardson and myself have obtained perfectly satisfactory backward motions by chilling the spine itself with this agent, but by no variation of treatment has it been made to occasion like effects when used on the skin alone. I trust that others may be more fortunate. I should add that blistering the skin, the use of rhigolene kept from evaporating by oiled silk placed over it, as well as numerous other methods of irritation, have one and all failed to reproduce the results which are given by the rhigolene jet. I do not think that any of the ethers to be obtained here have so low a boiling point as those used by Dr. Richardson, and since it is the peculiarity of rhigolene to freeze or chill very abruptly, owing to its low boiling point, it may happen that transatlantic observers will be able to repeat my experiments with ethers, which in this respect approach it in their mode of action. I am not aware that rhigolene has been used abroad, and on this very account I have been careful to exhibit my experiments to numerous physicians, among whom were Mr. Spencer Wells and Drs. Nicolayson, Loring, Keen, Mears, and Parry. I was ably assisted throughout these researches by Dr. John T. Wilson, of Maryland.

ART. III.—*Four Cases of Excision of the Inferior Dental Nerve, on Account of Intractable Neuralgia.* Reported by S. W. GROSS, M. D., of Philadelphia.

IN view of the fact that any measure for the relief of obstinate neuralgia of the face must prove of interest to the profession at large, the reporter is induced to place on record the four following examples of neuralgia from morbid changes in the inferior dental division of the third branch of the trifacial nerve, which occurred in the practice of Professor S. D. Gross. No remedy should be neglected in an affection which involves so much suffering and misery. Even if pain were alleviated only temporarily, it would be highly valuable, and almost any operative procedure would be justifiable. All known remedies for the relief of the disease had been employed without avail; and the operation of trephining the lower jaw-bone, and exsecting as much as possible of the trunk of the nerve, was instituted as a final resort. Entire immunity from pain has resulted in every instance.

CASE I.—Michael F., an Irish labourer, fifty years of age, applied at the surgical clinic of the Jefferson Medical College, on the 26th of October, 1867, on account of atrocious neuralgia of the side of the left cheek, from which he had suffered for nearly four years. The pain began in the left half of the lower lip, radiated to the alveolar processes and teeth, and along the side of the cheek as far as the temple, and occasionally invaded the soft parts over the upper maxillary bone. The paroxysms recurred every five minutes, and during the attacks the features were distorted by spasms of the facial muscles, and the man fell upon his knees, and grasped his jaw firmly with both hands, the pressure thus made frequently mitigating the suffering. The pain was always brought on and exalted by speaking and eating; sleep was almost impossible, and life was rendered miserable. The patient had resided in a malarious district, and been the subject of intermittent fever for nearly eight years.

For the relief of his exquisite sufferings, Professor Gross carried a curvilinear incision down upon the lower maxillary bone, extending from three-quarters of an inch above the angle of the bone to nearly its symphysis. The flap thus made being dissected up, and held out of the way, the crown of a small trephine was applied at three different points over the situation of the dental canal. One disk, including the entire thickness of the bone, was removed at the mental foramen; a second, comprising only the outer table, was excised about two-thirds of an inch posterior to the former; and a third opening, likewise limited to the external lamina, was made just below the position of the inferior dental foramen. About two inches and a half of the exposed nerve were then excised. Two vessels required ligature, and the wound was approximated by the twisted suture.

The nerve was found to be enlarged, and inflamed. There were very decided linear injection and minute spots of ecchymosis dotting the neurilemma. The cord was thickened, probably by serous infiltration into the tissue of the neurilemma and into the sheaths between the primitive filaments. Just before it emerged from the mental foramen it was the seat

of actual exudation, having lost its smooth, pearly appearance, and being of a yellowish-red colour, rough and wrinkled. At this point there was undoubted incipient fatty degeneration. Examined microscopically by Dr. James Tyson, the pulp of the nerve was found to have undergone no morbid changes, excepting that some pigment-flakes were disseminated throughout the field. There seemed, however, to be a closer arrangement of the fibrils than is natural, producing an appearance similar to that commonly known as fibrous.

Three weeks have now elapsed since the operation, and Foley is entirely free from pain. For several days there were occasional fits of severe suffering, which were evidently due to the influence of the morbid habit. At the present time the cure is complete, notwithstanding the fact that the previous pain about the temple pointed to involvement of the anterior auricular ramifications of the inferior maxillary nerve.

CASE II.—A gentleman of this city, sixty-four years of age, who had been the subject of violent neuralgic pains on the right side of the face for upwards of eight years, came under the care of Professor Gross early in August, 1867. There was no evidence of a rheumatic diathesis; he had never suffered from malarious disease; he was not troubled with neuralgia in other parts of the body; the teeth were not carious; nor was his system debilitated, or broken down by advancing years.

The trouble first manifested itself during convalescence from typhoid fever, by tenderness of the right side of the lower lip, which was aggravated by pressure. This gradually increased until the entire inferior maxillary region was involved. The greatest suffering was experienced at the site of the mental foramen, and, now and then, pain was felt along the right side of the nose, thus pointing to involvement of the nasal filaments of the suborbital nerve. For the first three years the attacks were infrequent, there being intervals of six months when he was free from pain altogether. Subsequently the intervals were diminished to six weeks, then to three weeks, until within the past four years, during which they were continuous, there not being a single day that he did not suffer tortures. The pain was always worse in damp weather, and very greatly exalted by currents of cold air. For eight weeks previous to the operation, the patient had ceased to talk, as the slightest effort at articulation was productive of intense agony. The necessary movements of the face in mastication and deglutition brought on violent paroxysms, so that nutrition was accomplished at the expense of great suffering. Fortunately, he slept well, recumbency appearing to alleviate his misery.

On the 9th of August, three inches of the nerve, being its entire extent from its entrance into the inferior dental canal to its exit at the chin, were removed by means of five crowns of the trephine, which included the whole thickness of the bone. Through the most posterior opening the gustatory nerve was plainly visible, but it was not interfered with. The dental canal, at about the middle of its course, was much contracted; so much so, indeed, that it would not admit of the smallest pocket probe. This concentric narrowing of the canal was limited to half an inch. The nerve was atrophied from pressure at this point; but above and below it was of its natural size, and decidedly red and vascular.

The operation afforded immediate relief, and at the date of this report, upwards of three months subsequently, there has not been the slightest recurrence of pain. The normal sensibility of the corresponding side of the

lip is blunted, and there is occasional spasm of the inferior labial muscles, without, however, the least suffering.

CASE III.—George S., a German, fifty-four years of age, applied at the surgical clinic of the Jefferson Medical College, late in May, 1867, on account of excruciating neuralgic pains of the right side of the face, under which he had laboured for three years. The paroxysms were intermittent and irregular. On some days he was free from suffering; on others he had four attacks; and, again, there would be as many as ten. They were increased by cold and damp states of the atmosphere, and articulation and mastication were productive of intense agony. The pain always began in the right lower lip, extending from that point to the lower and upper teeth, through the temple, and expending itself on the right side of the forehead. His sufferings were always worse at night, so that he did not average half an hour of sleep. When the pains were long continued and most severe, he was obliged to support his head with his hands, and exert strong pressure, which afforded some relief. At these times the pains gave rise to a slight degree of inflammation over the zygoma, the integuments of that region, for the circumference of a quarter of a dollar, being tender, red, and swollen; and this condition occasionally lasted for an entire week at a time.

As there was some suspicion that the affection was due to malarial poison, George was put upon ten grains of quinia, with one-third of a grain of morphia every night, and ordered every eight hours a pill containing two grains of quinia, one-half of a grain of extract of aconite, the twentieth of a grain of arsenious acid, and the thirtieth of a grain of sulphate of strychnia. Under this treatment, which was continued for two weeks, the pain was somewhat subdued, but not eradicated, and it was therefore decided to resort to excision of the nerve.

On the 12th of June two inches and three-quarters of the right inferior dental nerve were accordingly removed by four applications of the trephine, the outer table of the bone alone being excised. The nerve presented marked signs of chronic inflammation, being red, congested, and enlarged; but, as in the former case, it was not examined microscopically. It is now upwards of five months since the operation, and the patient is entirely rid of his sufferings.

CASE IV.—A lady, 67 years of age, thin, tall, and pallid, applied to Professor Gross in May, 1863, on account of a most violent neuralgia of the right side of the face, extending along the forepart of the jaw and chin, and thence up to the lower and upper lips as far as the lateral aspect of the nose. She had suffered in this manner for nearly ten years, latterly in so severe a form as seriously to impair her general health, and deprive her of all social and domestic enjoyment. The paroxysms were frequent and atrocious. Whenever she attempted to talk, eat, or drink, the pain darted with the rapidity of lightning through the face and lips, and compelled her to cease her efforts and to compress the parts forcibly with the hand. Three disks of the jaw-bone were removed with the crown of the trephine, with the effect of immediate relief of the violent paroxysms; but for some weeks she still experienced slight uneasiness in the lips and side of the face near the nose. Ultimately, however, this also vanished, and she entirely regained her health. The piece of nerve removed was nearly three inches in length. With the exception of being slightly compressed at two points of its extent, the result apparently of concentric hypertrophy of the dental canal, it presented no appreciable lesion.

It will be observed that in three of the cases detailed in this report the cause of the neuralgia was referable to an inflamed condition of the nerve, combined, in one, with limited atrophy, from pressure exerted upon it by concentric hypertrophy of the inferior dental canal; and in one, to the latter lesion alone. Five months, four months, three weeks, and four years and a half have elapsed since the operations were executed, and the relief is perfect. How long this immunity from suffering will exist, is a question which can only be decided by a close watching of the respective cases, as there are no perfect data, embracing extended periods of observation, upon which to form any adequate idea of the length of time that these patients may be expected to remain free from a recurrence of their troubles.

It will be remembered that Professor Carnochan,¹ of New York, in 1858, reported three cases of *tic douloureux* of the second branch of the fifth pair of nerves, cured, at any rate, respectively, for one, two, and fourteen months, by excision of that trunk close to the foramen rotundum of the sphenoid bone, along with the sphenopalatine ganglion. M. Boeckel² has narrated two instances in which he removed two-thirds of an inch of the gustatory, and one-half an inch of the mental nerve, on account of neuralgia of the side of the tongue and cheek. In both there was relief for several months, if not permanently. In one it appears to have recurred slightly in some other branches of the trifacial; in the second the report only extends over one month. Still more recently, the late Dr. J. Mason Warren,³ of Boston, recorded three instances of excessive neuralgia of the inferior dental nerve, in which trephining the lower jaw near its angle, and excising half an inch of the nerve, gave temporary relief in two, and entire relief in the third for one year, when the patient was lost sight of.

The operations of Boeckel and Warren, as well as those of a similar nature which preceded them, are faulty, and have, in a great number of instances, signally failed. In the one, half an inch of the inferior dental nerve was excised as it emerges from the mental foramen; and in the other an equal extent of the nerve was removed just below its point of entrance into the dental canal. In the cases above reported, the entire portion of the nerve contained in the dental canal, from its point of entrance to that of exit, was excised, and it is, therefore, believed that the relief will be permanent, especially when it is remembered that one of the patients has remained free from suffering for four years and a half. At any rate, the cases will be closely watched, and, in the event of a recurrence of the paroxysms, and the gaining of the consent of the patients, the inferior maxillary nerve will be excised close to the foramen ovale of the sphenoid bone.

PHILADELPHIA, November 15, 1867.

¹ American Journal of the Medical Sciences, Jan. 1858, p. 134 et seq.

² Gazette des Hôpitaux, Jan. 7, 1865.

³ Surgical Observations, with Cases and Operations. Boston, 1867.

ART. IV.—*The Hypodermic Injection of Morphia in Gout and Pleurisy.*

By THADDEUS L. LEAVITT, M. D., of Germantown, Pa.

THE prominent object of the medical practitioner, it seems to me, should be to give *speedy* relief to the sufferings of his patient. Impressed with this belief, upon being summoned last February to visit a patient, aged about fifty-five years, afflicted with the most intense pain in the knee-joint, from an attack of gout, to which disease he had been a victim for the last six years, I did not hesitate to immediately inject, beneath the skin, in the locality of the seat of pain, the third of a grain of the acetate of morphia in solution, which was followed by the most delightful results; in three minutes the intensity of the pain diminished, and in ten minutes had almost ceased, the patient expressing himself in glowing terms as to the efficacy and promptness of this new remedy. The night was passed most comfortably, no return of the paroxysm occurring. The bicarbonate of potassa and colchicum being also administered, the attack was shortened, and the patient rallied rapidly, having none of the depression and debilitating effects, the resultant of long-continued pain, to recover from, as in former times.

Subsequently, an attack in the left hand, in April, was treated in the same manner, with like satisfactory result.

This being the only case of gout in which up to the present date I have had an opportunity to test this application, it is merely recorded for what it may be worth in the future; the pleasing experience gained, however, being, to my mind, sufficiently satisfactory to warrant its repetition in other cases.

In *all* conditions of acute suffering, pleurisy, acute rheumatism, angina pectoris, &c., no remedy is so prompt and efficient as the hypodermic use of the morphia salts.

Mrs. Martha F., æt. 40 years, was seen Feb. 17, 1867, for the first time; a well-marked case of acute pleurisy. The pain was most intense; great dyspnœa existed; sharp, lancinating pains at each rapid inspiration completely prostrated the patient, whose sufferings had been continuous for twelve hours. About one-sixth of a grain of the acetate of morphia was used hypodermically, and with prompt relief, a few minutes only elapsing after its injection before its beneficial results followed. The ordinary treatment being continued, a recovery was effected in a short time.

This one case serves to illustrate the success of the application, and renders unnecessary the recording of several other cases of like import, the notes of which have, however, been preserved.

ART. V.—*Observations in Clinical Surgery, No. II., being a Report of Cases treated in the Surgical Wards of the Episcopal Hospital, during the months of January, February, and March, 1867, with Notes and Comments.* By JOHN ASHHURST, Jr., M. D., Surgeon to the Hospital, etc.

THE Medical Staff of the Episcopal Hospital consists of four physicians and four surgeons. There are, besides these, three resident physicians: one on duty in the medical wards, one in the surgical, and the third having charge of the "Dispensary," or out-patient department of the hospital.

One physician and one surgeon are on duty at a time, the year being divided for this purpose into four terms of three months each.

The surgical wards are capable of accommodating from fifty to sixty patients; a capacity scarcely equal to the demand made upon the hospital for surgical aid, but which, in the present condition of its financial affairs, cannot well be increased. The out-patient department takes off a very large number of slight injuries and chronic cases, and is besides constantly used for convalescents who require a certain amount of surgical *surveillance* without its being necessary to retain them in the wards.

During my last term of service I had under treatment and observation one hundred and fifty cases, many of them of great severity. Forty-five of these were transferred to me by my cousin and colleague, Dr. Samuel Ashhurst, and about the same number were, in turn, left by myself to the care of the senior surgeon of the hospital, Dr. Wm. S. Forbes, whose term of service succeeds my own. To render the histories of these more complete, Dr. Ingham, the senior resident physician, has continued my notes up to the end of June, at which time but six remained of those who had been under my care in the preceding March. The appended table [Table I., see p. 50] will show at a glance the nature, result, etc. of the cases under treatment during the first quarter of the present year, which are to form the subject of this paper, and the histories of some of which I propose to narrate in detail.

Two very interesting cases of stab wound were received during the night of March 18th–19th, the patients being husband and wife, and their injuries having been inflicted in an attempt to commit murder.

CASE I. *Penetrating wound of chest; recovery.*—Barney O'N——, an Irishman, thirty-six years of age, and a labourer by occupation, was stabbed while in bed on the night of March 18th, 1867, and was brought to the hospital in a state approaching collapse, at about one hour after midnight. The wound bled quite freely, but was quickly closed with a compress and adhesive strips by the resident surgeon, who also administered stimulants both internally and to the surface. When I saw the patient at about 11 A. M., of the 19th, he had reacted, and was comparatively com-

fortable, with a pulse of 92. I found the wound on the left side of the chest, over the region of the heart; there was great emphysema of the areolar tissue, extending to a considerable distance from the wound, with unnatural resonance in front, and marked dulness with tubular breathing posteriorly. The heart's impulse was absolutely imperceptible. The patient was placed upon milk diet, and opium and whiskey ordered to be given if required. The first dressing was not removed from the wound until after several days, when union was found to have taken place. Not a single bad symptom followed from this time, and the patient was discharged, cured, April 4th, 1867, having been but sixteen days in hospital. I have no doubt but that the pleural cavity was opened in this case, the emphysema and collapse of the lung being otherwise inexplicable. The lung itself, however, appears to have escaped injury.

CASE II. Wound of chest; probable wound of diaphragm; recovery.—Margaret O'N——, wife of the preceding, Irish, thirty-seven years of age, was admitted at the same time with two stab wounds, one on the left side over the region of the false ribs, and the other of the corresponding buttock, the latter, however, being merely a flesh wound. She was in a very depressed condition from shock and loss of blood when admitted, and for many hours it was doubtful whether she would rally. When I saw her at the morning visit, she breathed with great difficulty, the act of respiration being accomplished, apparently, entirely by the subsidiary muscles and without the aid of the diaphragm. There was a small circumscribed swelling around the chest wound, which appeared to be a thrombus, this means being adopted by nature to check the bleeding, which had been very profuse, and which seemed to have proceeded from a wound of the intercostal artery. The patient's injuries were dressed as in the preceding case, and with the exception of slight abdominal tenderness and meteorism, which were manifested the next day, her condition steadily improved, the thrombus having entirely disappeared in the course of a fortnight (probably by a process of absorption), and the patient leaving the hospital, well, on the twenty-first day (April 9th, 1867).

Remarks.—Not a great many years ago, it would have been deemed necessary to bleed both of these patients the moment they had reacted, and to repeat such bleeding as often as the skin became warm, or the pulse increased even but slightly in force and volume. When we consider the manner in which penetrating chest wounds were almost universally treated by our predecessors, we cannot be surprised that they found the prognosis of such injuries exceedingly grave. A man with a wound of the pleural cavity, even if the lung itself be not involved, has quite enough to contend with without the superaddition of bleeding, starving, or purging. The most rational, and, I believe, the most successful mode of treatment, is the following: In the first place the wound should be closed as quickly and as firmly as practicable; this has the advantage of placing the injury as much as possible in the condition of a subcutaneous wound, and even if the case should do badly, and empyema should ensue, it will generally be better to perform paracentesis in the usual locality than to reopen the original wound. The first dressing having been carefully applied, should not be disturbed, as a rule, for several days; not until primary union is

likely to be sufficiently firm to allow of the wound being exposed without the adhesions giving way. Of course, if a bleeding vessel is found when the wound is first seen, it should be secured; but if a clot has already formed, it need not be disturbed, for, as in the second case related above, the wound may heal over it, and the clot itself be absorbed, or, if suppuration should take place, it will not be until after the bleeding vessel has been firmly occluded.

These remarks, of course, are to be understood as applying to incised and punctured wounds, and not to those produced by firearms. I doubt if any advantage is to be obtained by attempting to procure primary union in gunshot wounds.

There is no necessity for starvation or "absolute diet," so-called, in wounds of the chest. The patient is much more apt to do well, both as to his general and his local condition, if supplied with easily digestible and nutritious food (and I know of nothing which answers the purpose better than milk) in moderate quantities and at frequent and regular intervals.

Of drugs, opium is the one most often required. Pleurisy, or pneumonia, if they occur (and, fortunately, in healthy persons, judiciously treated, they occur much less often than might *a priori* be expected) must be treated *secundum artem*; but the patient will be none the worse prepared to endure an attack of pneumonia from not having been rendered exsanguineous by previous resection.

Thirty cases of *fracture* were treated, twenty-four being simple fractures, and the remainder compound or complicated. Three of the latter required amputation (in one case a double amputation), and one an excision of several inches of the radius; these will be referred to again under the head of operations. In one case, of compound fracture of the ulna, the wound being small, and the patient seen almost immediately after the occurrence of the accident, it was possible to obtain primary union of the wound (thus converting the injury into a simple fracture) by the use of gauze and collodion. In a similar case I should be disposed to employ Dr. Richardson's "styptic collod," which I should suppose would probably answer the purpose even better than the ordinary collodion.

A case of much interest was one of gunshot fracture of the seventh dorsal vertebra, in which careful observations of the temperature were made from time to time; this case has been fully reported to the Pathological Society of Philadelphia, by Dr. Forbes, and will be found in the record of their proceedings.

The accompanying table [Table II., p. 51] will give a compendious view of the cases of fracture, which cannot be reported at greater length (though of some interest) for want of space.

Nine cases of *burns and scalds* were under treatment; most of them

¹ See Medical News, June and July, 1867.

slight cases, and healing rapidly under the use of the "carron oil," which has always seemed to me the very best dressing that can be applied to these injuries; two cases were, however, of unusual severity not to have proved fatal; one of these subsequently submitted to amputation at the shoulder joint at the hands of Dr. Forbes, my successor in the rotation of hospital duty.

Seven cases of *chilblain* and *frost-bite* were treated during the past winter; a much smaller number than during the corresponding season of 1866, which may be remembered to have been unusually severe. When the effects of cold have gone so far as to produce sphacelation, we have treated the cases as we would have treated gangrene from other causes—removing the dead parts and healing the remaining wounds, as in any other instance. Where the inflammation from frost-bite has not been so excessive as to produce sloughing, we have found great advantage from the use of raw cotton as a dressing, the parts being daily painted with a weak solution of nitrate of silver [gr. v or vj— $\bar{3}$ j], as recommended, if I mistake not, by Mr. Skey in cases of superficial burns.

Six cases of *necrosis* and two of *caries* were under treatment. In four of the former and in both of the latter operative interference was required.

CASE III. *Necrosis of humerus; amputation at shoulder-joint; recovery.*—Robert K—, a native of this city, a school-boy, fourteen years old, entered the surgical wards of the Episcopal Hospital on March 26th, 1867. Some months previously he had been attacked by what was for some time supposed to be a form of subacute rheumatism. The pain and swelling had finally localized themselves in the upper part of the right arm, suppuration ensued, and the upper part of the humerus became necrosed. Subsequently the shoulder and elbow joints became involved in the process of disorganization, and the strumous condition of the patient was manifested by the development of periostitis in the opposite radius. The patient experienced great pain upon any motion of the right arm, and was already a good deal blanched and emaciated by the drain of constant supuration. He was accordingly brought under the influence of ether three days after his admission, when I proceeded to remove the arm at the shoulder-joint, by the method of Larrey, which I have always practised in preference to any other. Scarcely any blood was lost during the operation, the flaps were accurately adjusted with several points of lead suture, the ligatures brought out at the lower angle of the wound, the stump well supported by compresses above and below, and the dressing completed by the application of a laudanum fomentation, covered with oiled silk, and secured in place by a broad bandage loosely enfolding the chest. Not a single bad symptom interrupted the favourable progress of the case, and the patient left the hospital on the fiftieth day (May 18, 1867) with an admirable stump, which had been perfectly healed for some time, the patient having been retained in the ward for treatment of the periostitis of the opposite side.

Dissection of the amputated arm showed that the upper part of the shaft of the humerus was dead, and its entire length greatly thickened; the head of the bone was bared, as well as the lesser sigmoid fossa, and the concave surface of the olecranon process of the ulna.

The other cases of necrosis, which required operative interference, were one in which the tibia was the bone involved, some small sequestra being removed by the aid of the gouge, trephine, and Hey's saw, one in which excision of the metatarso-phalangeal joint of the great toe was performed (by Dr. Ingham, the house surgeon), and a very interesting case of necrosis of the femur following a gunshot wound, received at the battle of Chancellorsville, May 2d, 1863; in this case I removed a portion of a leaden ball which had been imbedded in the femur, and had thus retained its position for almost four years.

Both cases of caries referred to required amputation, in one just below the tubercle of the tibia, the case doing well in spite of slight secondary hemorrhages which occurred on the seventh and eighth days, but were readily arrested by the use of pressure and cold. The other case presented some points which seem to merit a detailed report.

CASE IV. Caries of tarsus and metatarsus; amputation of anterior portion of foot by a modification of Chopart's operation.—S. S——, a farmer, born in this country, fifty years old, was admitted to the Episcopal Hospital, March 13, 1867, suffering from the effects of a blow received from an axe seven months previously. There was great thickening of the anterior portion of the left foot, and diseased bone could be felt through several fistulous openings. Several small spiculæ had at different times made their way out with the discharge.

I had recently read Mr. Hancock's remarks upon amputations about the foot and ankle-joint,¹ and had been especially struck with his views as to the propriety of sometimes regarding the foot as if it were a single bone, in amputating, without regarding the separate articulations. The present seemed to me a suitable case for the adoption of this plan, and accordingly, after shaping the flaps in the usual way for a Chopart's amputation, I divided the foot with a saw, allowing the posterior surface of the scaphoid bone, which seemed healthy, to remain, and removing the anterior edge of the os calcis, which was diseased. The stump was then dressed in the usual way, and the patient recovered without a single untoward symptom, leaving the hospital, cured, on May 15, 1867, the cicatrix being perfectly sound and firm, and there having been no exfoliation from the divided tarsal bones.

By adopting the plan pursued in this case, I was enabled to retain the articulation between the scaphoid and astragalus, thus adding materially to the value of the remaining portion of the foot; the stump also being slightly longer than it could have been made by the ordinary method of Chopart.

Seven cases of joint disease were under treatment during my term of service; three of these were of the hip, two of the knee, and one each of the ankle and of the elbow. The mode of treatment which I have found most successful in affections of the joints has consisted essentially in profound rest, graduated extension, and, after the acute symptoms have subsided, moderate pressure around the part involved. A year or two ago I treated in this way a case of hip disease, entire recovery following in

¹ Published in the London Lancet, 1866, and reprinted in Braithwaite's Retrospect for January, 1867.

the short space of six weeks; a result, however, which, I regret to say, is quite as exceptional in my own experience, as in that of my professional friends.

One of the cases of hip disease under treatment this year was transferred to the medical wards, on account of symptoms of tuberculous meningitis, which were rather suddenly developed, and which subsequently terminated fatally; another remained in about the same condition after several months' treatment; while the third was subjected to the operation of excision of the head of the femur, as a means of obviating a rapidly approaching death, with the effect certainly of greatly prolonging life and of placing the patient in a more comfortable condition, though, as the patient is still under treatment, it is as yet impossible to say what may be the ultimate result. This case has been one of great interest, and will be made the subject of a special report when terminated.

The case of diseased elbow was also subjected to excision (unfortunately with a fatal result); and as this operation has not been very frequently performed in this country in civil practice, I propose to narrate the history of this patient at some length.

CASE V. *Disease of elbow-joint; resection; death on thirty-third day.*—B. E. F——, an American, aged fifty-six, a blacksmith, was admitted to the surgical wards of the Episcopal Hospital on Jan. 26, 1867. He had been sent into the medical wards the day before, under the impression that he was suffering from rheumatism, and the true nature of his affection was not ascertained until the visit of the attending physician, Dr. James H. Hutchinson, upon the next morning. There was great enlargement around the left elbow-joint, which evidently contained a considerable amount of fluid. There was not much pain about the part, and no grating perceptible on motion of the joint. For nearly six weeks the patient seemed to improve, with occasional relapses, but at the end of that time it became evident that the ligaments about the joint were becoming rapidly disorganized, and distinct grating on rubbing together the opposing joint surfaces showed that the articular cartilages were undergoing absorption. At the same time the patient's general condition began to deteriorate, and an observer would have supposed that instead of his age being, as he stated, fifty-six, it was at least ten years more. This was in a great degree owing to hardships which he had endured for several years before entering the hospital.

When it became manifest that the elbow-joint was hopelessly disorganized, it became a question whether the limb should be sacrificed, or whether an effort should be made for its preservation by resorting to excision. The latter mode of procedure was adopted, on account of the limitation of the diseased action to the joint itself, and because, in the unfavourable general condition of the patient, it did not appear that an amputation would be much less hazardous than a resection.

The patient was accordingly brought under the influence of ether on March 20, and the joint being fairly exposed by an H incision, an inch of the lower extremity of the humerus, and an inch and a quarter of the ulna, with the head of the radius, were removed by means of a "Butcher's saw," and a considerable amount of disorganized tissue clipped away from the floor and sides of the wound with the large cutting forceps described by

the same eminent surgeon. A good many ligatures were required to arrest the hemorrhage from small vessels which had been enlarged by inflammatory action, and, the edges of the wound having been brought together by points of the lead suture, the limb was placed in a well-fitting fracture-box, and the patient restored to his bed.

The diminution of pain after the operation was most marked, and for a week or ten days the progress of the case was as favourable as could be wished; but from this time, though with occasional improvement, the patient gradually failed, and the fatal issue, which took place on April 22, seemed rather caused by exhaustion and general diminution of vital power than by any positive complication or sequel of the operation. Though the soft parts had united to a considerable extent, there was no attempt at union between the ends of the resected bones, and there was slight ulceration of the mucous lining of the bladder, possibly following the use of the catheter, which it was necessary to employ frequently during the last period of the patient's life.

Remarks.—It is not necessary to dwell upon the steps of the operation for excision of the elbow. The points of most importance are to avoid wounding the ulnar nerve, and to divide the radius above its tubercle, thus preserving the attachment of the biceps muscle. I cannot speak too highly of the advantages to be derived from the employment of Mr. Butcher's saw and cutting forceps in this and similar operations. These instruments are comparatively little known in this country, and those which I use were made after the descriptions in Mr. Butcher's work on *Operative and Conservative Surgery*, by Mr. Gemrig, of Eighth Street, and are, so far as I know, the only ones in use in Philadelphia.

With regard to the propriety of excision of the elbow-joint as a substitute for amputation, of course every case must be judged upon its own merits. Almost any risk is permissible in an effort to save a limb, and where the extent of lesion permits a choice, unless it is manifest that an amputation will probably save life, while an excision will not, the latter operation is, I think, preferable to the former. The case is very different from one of compound fracture in the shaft of a bone, for in such injuries, unless in exceptional instances, I have not seen any advantage from a resort to resection.

Two cases of popliteal aneurism were admitted in January, 1867, and either presented points of considerable interest.

CASE VI. *Aneurism of right popliteal space, occurring several months after successful ligation of left femoral artery; deligation of right femoral; recovery.*—Henry W—, an American, thirty-three years old, was admitted to the hospital on the 2d of January, 1867. He had previously been in the wards during the preceding summer, suffering from an aneurism of the left popliteal artery, which had been cured by the application of a ligature to the femoral, the operation having been performed by Dr. Packard, the then attending surgeon, on the 7th of August. He now presented a large aneurism in the upper and anterior part of the right popliteal space, which had increased within a few days with great rapidity, and urgently demanded surgical interference. His occupation (that of a turner)

required a good deal of exertion of the lower limbs, and his own theory of the formation of the second aneurism was that, upon returning to his work after the first operation, he had as much as possible spared the affected limb, thus throwing an additional strain upon that of the opposite side.

The second aneurism had been first noticed but ten days before his admission to the hospital.

The patient having been brought under the influence of ether two days after his entrance, I made a short incision over the line of the artery in the lower angle of Scarpa's space, a small vessel, which spirted, having to be secured before the femoral artery itself was reached. The main trunk was then isolated upon an aneurismal needle and tied with a single ligature, the pulsation in the aneurism ceasing instantly upon the tightening of the knot. The incision was closed by means of a hare-lip pin and lead suture and dressed with a simple compress of sheet lint; the limb was enveloped in cotton wool, secured by a roller bandage, and placed in a slightly flexed position upon a soft pillow. Not a single bad symptom was presented from first to last, the ligature from the small vessel dropping on the sixth and that from the femoral artery on the tenth day; the patient was allowed to get up on January 31st, and left the hospital, well, on February 9th, the thirty-sixth day from the operation. He presented himself at my office several months afterwards, the limb appearing sound and healthy in every respect.

CASE VII. *Incipient aneurism of right popliteal artery; ligation of femoral in middle third; death on forty-fourth day; autopsy.*—M. G.—, German, a labourer, was admitted to the Episcopal Hospital on January 10, 1867, suffering from what was supposed to be a sprain and contusion of the right leg. He gave his age as fifty-five, but appeared to be older; he was extremely deaf, and taciturn, so that it was impossible to get a satisfactory history of his case, even by means of an interpreter. It was ascertained, however, that he had for some time led a life of great hardship, sleeping under hedges and by haystacks, and with very insufficient food, and had finally been incapacitated by slipping and falling in a barn where he was spending the night. Two days after his admission he had an attack of pleurisy, which was quickly relieved by the use of poultices.

On January 16th, attention was first directed to the existence of an aneurism in the popliteal space of the affected (right) side. There was a not very well defined tumour, with an obscure diffusive pulsation; great pain, increased by pressure or motion; and swelling with venous congestion of the parts below. Pressure on the femoral artery instantly arrested the pulsation and diminished both the size and tension of the tumour. The next day all these signs were more marked, and there were superadded a thrill and a slight though decided *bruit*.

On the 18th, after a thorough examination by all my colleagues, it was decided in a prolonged and careful discussion of the matter, that it would be proper to tie the femoral artery without further delay, although the case was confessedly very unfavourable for the success of any operation.

The patient having been accordingly etherized, the femoral artery was tied in its middle third, the sartorius muscle being so thin, and the soft parts generally so flabby, that the pulsation of the vessel was plainly perceptible down to the point where it pierced the adductor muscle. The patient being very thin, the artery lay quite superficially, and the incision through the skin was scarcely more than an inch and a half in length.

The wound was dressed with a simple compress, and the limb wrapped in cotton as in the preceding case.

The femoral artery was of unusual size, and the ligature did not come away until the nineteenth day.

With the exception of an attack of diarrhœa of slight duration, this patient did very well until February 18th, exactly one month from the date of the operation. Furred tongue and fever now presented themselves, followed in three days by intense pain above the right patella, and, in the course of a week, by evidences of the formation of an abscess, probably, communicating with the knee-joint. Still later it became evident that the condition known as "pyæmia" was present in an aggravated degree; the patient sweated profusely, and there were constant tremor and *subsultus*; subsequently the patient's breathing became greatly oppressed, and death, preceded by a profoundly typhoid condition, ensued on March 3, 1867.

An *autopsy* was made the next day with the following results: *Rigor mortis* not marked; *head* not examined; right *lung* adherent posteriorly and greatly congested though crepitant; left *lung* posteriorly presented several so-called "metastatic" deposits, in various stages from that of mere congestion to that of puriform degeneration; it also contained in one place a small mass of calcified tubercle; *heart* healthy; *liver* large and slightly cirrhotic; *spleen* large and healthy; *kidneys* very large and flabby.

The *femoral artery* contained a firm clot from the point of ligature to the point where the *profunda* was given off. The two portions which had been divided by the ligature had been reunited by means of a thin fibrous band. The popliteal portion of the vessel was dilated, furnishing a good example of the very first stage in the formation of a fusiform aneurism.

The *femoral vein* contained a clot, unaltered above but softened below into a fluid of puriform appearance. The walls of the vein were perfectly healthy.

The *knee-joint* contained about three fluidounces of puriform serum.

Remarks.—These cases presented some interesting points for physiological study, which were made the subject of a communication to the Pathological Society of Philadelphia, at its meeting of January 23, 1867,¹ and need not, therefore, be reverted to in this place. They were also of great interest in a clinical point of view, and especially as bearing upon the question of the proper treatment of popliteal aneurism. This question is by no means yet settled; the Dublin school being particularly fond of the treatment by compression, while many able surgeons, with Mr. Syme, of Edinburgh, as their illustrious leader, still forcibly advocate the employment of the ligature in preference to any other means of treatment. I confess that I am disposed to think the latter gentlemen in the right. Deligation of the femoral artery in cases of aneurism, *if performed sufficiently early*, is a much less dangerous operation than has been generally supposed. Of course, if the surgeon delays until the venous congestion below the tumour is so great as to render imminent sloughing and gangrene, or if the operation is not resorted to until the aneurism is upon the point of bursting, the chances of a successful issue are much diminished. For such cases amputation above the knee may often be a better operation than deligation;

¹ See Amer. Journ. of Med. Sciences for July, 1867, page 147.

but for the earlier stages of aneurism, in a healthy subject, the ligature, carefully applied, offers a very favourable prognosis. Tying the femoral artery is indeed an operation of some delicacy, and should not be undertaken by one who is unaccustomed to surgical manipulations; but aneurism is almost never a disease that requires such immediate treatment as, *e. g.*, strangulated hernia, and the difficulties of the operation are therefore no argument against its being preferable to any easier method of treatment.

In the former of the preceding cases both femoral arteries were tied (at an interval of five months), with perfect success as the result of either operation. A few years ago I reported a case of unusually large popliteal aneurism, where ligation of the femoral artery was likewise perfectly successful.¹ Even in the fatal case above narrated it is evident that the unfortunate termination should not be charged upon the operative procedure, for the first bad symptom was not manifested until twelve days after the separation of the ligature, when the patient was, *quoad* the operation, entirely out of danger. The same pathological condition, with the same result, might have followed upon the amputation of a finger or the opening of an abscess, while the appearances after death showed that, as far as the operation itself was concerned, all had been accomplished that could have been expected.

Cases of aneurism which recover under the use of pressure alone are heralded as triumphs of conservatism; while the larger number in which (pressure having failed) deligation is finally resorted to are, if unsuccessful, too often quoted as evidences of the dangers of the operation, rather than of the risk of trifling with an affection which is always serious, and which occasionally runs a rapid course towards a fatal termination.

One case of gonorrhœal epididymitis was successfully treated by puncture of the *tunica albuginea*, and one of hydrocele by injection of pure tincture of iodine. Three cases of urethral stricture were under treatment, one being cured by gradual dilatation, one discharged for other than medical reasons, and one eventually dying from visceral disease, after being placed in comparative comfort by the operation of external division as practised by Prof. Syme, of Edinburgh.

Two cases of hæmorrhoids were submitted to the operation known by the name of Dr. Bushe, in each a perfectly satisfactory cure being obtained.

Two cases of cancer were submitted to operation. The first was a case of secondary cancer involving the axillary glands, the mamma having been removed in the summer of 1864, and the patient remaining free from disease for about two years. On account of the intimate connection of the deep-seated portions of the diseased structure with the axillary vessels, it was impossible in this case to remove the whole tumour. The patient was relieved from pain for a short time by the operation, but it cannot be said

¹ Transactions of the College of Physicians, Philadelphia, Feb. 1, 1865; see this Journal for July, 1865, p. 96.

that her condition was permanently improved. The case is principally interesting as having been made the subject of trial of two applications, both of which have been most highly recommended, and both of which, in this instance, most signally failed of producing the desired result. After the operation the whole wound was painted with a solution of chloride of zinc (gr. xxx—f℥j), as recommended by Mr. Campbell De Morgan.¹ So far from promoting healing by the first intention, and deodorizing the wound, the application in this case produced a linear slough over the entire surface which it had touched, and the stench was so intolerable that it was necessary to isolate the patient for the comfort of those remaining in the ward.

Afterwards (two months after the operation), when the disease had reappeared in the cicatrix, the tumour was injected two or three times, at intervals, with dilute acetic acid (one part to four), as recommended by Dr. Broadbent.² The only effect was the production of a small slough at each point of injection, without the slightest appreciable modification in the course of the disease.

The other case was that of a Welsh miner, sixty years of age, who presented an enormous mass of primary cancer in the right groin. Its growth had been quite rapid, and it had been treated, in the rural district from which he came, as a bubo and as a rupture, but had apparently never been recognized as a tumour of malignant nature. The mass was dissected away as closely as possible from the femoral vessels which it embraced, and a small portion, which, on account of its deep attachments, could not be removed, was touched with the actual cautery. The patient did perfectly well for eight days, when, after an attack of vomiting, the wound became gangrenous, and death followed in less than forty-eight hours. An *autopsy* revealed an extremely fatty condition of the heart, which would doubtless have proved a most serious complication in the case of any important operation that might have been performed.

I shall next invite the attention of the reader to a very interesting case of wound of the ulnar nerve, in which the affected limb presented somewhat the same appearance as that in a case reported by Mr. Hutchinson, and photographed in the third volume of the *London Hospital Reports*.

CASE VIII. *Incised wound of wrist, with lesion of ulnar nerve; observations of temperature in affected parts.*—Mary C——, a native of this country, thirty-two years old, entered the hospital on the 29th of January, 1867, to be treated for the results of a glass-wound received some time previously. The wound, which was on the ulnar side of the right wrist, was completely healed, but the hand remained useless on account of contraction of the flexor tendons, with loss of power and excessive hyperæsthesia of the corresponding fingers. The skin of the affected parts also presented in a marked degree that peculiar glossy appearance so characteristic of injuries of the nerves.

The treatment employed was, wrapping the hand in cotton, hypodermic

¹ See American Journal of the Medical Sciences, April, 1866, p. 532.

² Ibid., Oct. 1866, p. 547.

injections of morphia, the application of the strong tincture of the root of aconite, and afterwards the use of the galvanic current. Under this treatment the pain and hyperæsthesia were greatly alleviated, and the patient regained considerably the use of her hand. She left the hospital on May 3, her treatment having occupied ninety-four days.

The principal point of interest was the record of the comparative temperature of the right (affected) and left (healthy) hand. The observations were made by Dr. James V. Ingham, the house surgeon, and the temperatures are expressed in degrees of Fahrenheit's scale.

Record of temperature in case of wound of ulnar nerve.		First observation, March 3, 1867.	Second observat'n, Mar. 26th; the right hand just removed from covering of cotton.	Third observation, Mar. 27th; both hands exposed to air of ward for six hours.	Fourth observat'n, same day, 20 minutes later; after galvanization of right hand.	Fifth observation, Mar. 30th; right hand out of cotton for twelve hours.	Sixth observation, April 1st; both hands immersed in warm water for ten minutes.	Seventh observation, same day; both hands had been wrapped in cotton for some hours.
RIGHT (AFFECTED) SIDE—								
Between thumb and forefinger,	79°	89°.5	81°.5	81°	79°	93°	96°	
“ fore and middle “	73	88	81	82	75.5	94	95	
“ middle and ring “	71	90	78	77	72	93	93	
“ ring and little “	70	91	74.5	77	68	92	93.5	
LEFT (UNAFFECTED) SIDE—								
Between thumb and forefinger,	...	96	98	...	86	92	95.5	
“ fore and middle “	...	94	97	...	78	91.5	94.5	
“ middle and ring “	...	93.5	95	...	80	92.5	94	
“ ring and little “	...	90	96	...	80	91.5	94	

The above observations of temperature were carefully taken, and I have every reason to believe that they are accurately noted. They appear to show that the effect of the nerve lesion in this case was not so much to absolutely lower the temperature of the affected parts as to diminish their power of retaining their own temperature when exposed to cold, and generally to make them more susceptible to the influence of the temperature of the surrounding medium. The unusually low temperature noted in both hands on the 30th of March was probably due in a great degree to the observation having been made at an early hour, when the wards are generally colder than at any other period of the day.

The number of *surgical operations* performed during the three months, January—March, 1867, was twenty-five. This, of course, does not include the opening of abscesses or other such slight employments of the knife as are daily called for in a hospital.

Fourteen of the twenty-five were of sufficient importance to be designated as *major operations*, and of these five only proved fatal; moreover, in two of the latter life was undoubtedly prolonged by operative interference, and in one alone can it be said that the operation was the immediate cause of death; this was in the case of an old man from whose groin an enormous scirrhus tumour was removed, who died from gangrene of the wound, the autopsy showing his heart to be in an advanced state of fatty degeneration.

The annexed table (Table III., pp. 52-3) will show briefly the nature, history, and results of the cases of operation occurring during the time specified; and, before terminating this paper, I wish to offer a few remarks upon one or two of the cases therein contained, and which have not already been sufficiently dwelt upon, and upon the causes of death in all the cases that proved fatal among those which have formed the subject of discussion.

The case of partial excision of the radius, reported as No. 9 in the table, was that of a sailor who was brought into the house immediately before my morning visit, having been shot in a dispute a very short time previously. He had two wounds in his forearm, three in the upper arm, and one in the posterior part of the chest, just below the axilla. The radius was extensively fractured and comminuted, and it would appear that either he had been shot with more than one ball, or that the ball had been split against the radius, thus making two wounds of entrance in the upper arm; the fragments then joining each other again (for these wounds communicated subcutaneously) and passing out by the single wound of exit, and finally lodging in the subscapular fossa, where they could not be detected, and where they doubtless remain to this day. The excision consisted merely in removing all the broken pieces of the radius, and in cutting off the sharp projecting ends of the shaft, above and below, by means of a chain saw: in this way about $2\frac{1}{2}$ inches of the shaft were taken away. The only incision necessary was one in a longitudinal direction through the posterior wound, and, the principal vessels being thus avoided, no ligatures at all were required. The wound through the upper arm passed directly across the sheath of the brachial artery, which was felt pulsating immediately beneath the finger when the latter was introduced into the wound. There was, however, no secondary hemorrhage at any time, and the patient's progress towards recovery was uninterrupted by any unfavourable symptom.

The sixth case of the table, one of amputation below the knee, was the only one in which secondary hemorrhage occurred as a complication. In this case bleeding took place upon the seventh and eighth days after the operation, both times being easily checked by the application of cold, and finally prevented from recurring by the use of a roller bandage, used as a compress, and firmly secured in the popliteal space.

The total number of deaths among the 150 cases reported was six, or four *per cent.* This number may probably be increased by a fatal result in one or more of those remaining under treatment on June 30. Four of the six died during the quarter ending March 31, and two during the three months following. The causes of death were as follows: Exhaustion, with progressive emaciation, and bedsores, proved fatal in a case of gunshot wound of the spinal cord at the region of the seventh dorsal vertebra, life having been prolonged for sixty days from the date of the receipt of the injury. Visceral disease and gradual exhaustion, unconnected with the operative treatment, proved fatal in two cases, one of excision of the elbow-

joint, and the other of perineal section in a case of impermeable stricture of long standing. A case of double amputation died fifty-seven hours after the operation, from severe injuries of the head received at the time of the accident. "Pyæmia" was the cause of death in a case of deligation of the femoral artery; and traumatic gangrene in one of removal of a cancerous tumour from the groin.

In the preceding pages I have endeavoured to give a fair picture of the surgical practice of the hospital for a quarter of the year, and I think, when it is remembered that the cases received in the wards are, as a rule, of more than average severity (slight cases of injury and those of chronic surgical disease being generally treated as out-patients), it must be granted that the results of treatment compare not unfavourably with those obtained in other similar institutions. I propose to continue from time to time to submit to my professional brethren clinical reports like the present, believing that by so doing I may furnish a certain amount of material of more or less practical importance, and at the same time contribute to extend the reputation of the hospital which it is my honour to serve.

PHILADELPHIA, July 30, 1867.

TABLE I.—*Giving Number Treated, Sex, Result, Duration of Treatment, Operations employed, etc., in 150 Surgical Cases.*

Nature of cases.	Total number under treatment.		Recovered.	Improved.	Died.	Mean duration of treatment in other than fatal cases.	Duration of treatment in fatal cases.	Percentage of fatal cases.	Amputations.	Excisions.	Ligature of arteries.	Other operations.	Cause of death in fatal cases.
	Males.	Females.											
Incised wounds,	4	3	1	3	1	days	days	p'r c't					
Lacerated wounds,	3	3	..	3	..	34							
Punctured wounds,	3	2	1	2	..	49							
Simple fractures,	24	17	7	22	2	13							
Compound fractures, &c.	6	6	..	4	2	65½	{ 2½ } { 60 }	33½	3	1	..	..	{ (a) Injury of brain. { (b) Exhaustion.
Bending of costal cartilage,	1	1	..	1	..	14							
Luxation (of humerus),	1	1	..	1	..	20							
Contusions and sprains,	11	8	3	10	..	24							
Burns and scalds,	9	5	4	6	2	40½							
Frost-bite,	7	7	..	4	3	20½	..	..	1				
Periostitis,	2	2	..	1	1	49							
Necrosis,	6	6	..	3	2	65	..	..	2	1	..	2	
Caries,	2	2	..	2	..	72	..	..	2				
Affections of joints,	7	6	1	..	1	61	85	14½	7	..	2	..	Death from exhaustion and visceral disease.
Ulcers,	17	13	4	9	8	62							
Abscesses and boils,	4	4	..	3	1	36							
Paronychia,	1	1	..	1	..	29							
Onychia, etc.,	1	..	1	..	1	8	..	..	..	..	1		
Affections of eye,	11	9	2	7	3	44	..	..	..	..	1		
Aneurism (popliteal),	2	2	..	1	1	38	52	50	..	..	2	..	Death from pyæmia.
Gonorrhœa,	10	10	..	10	..	40							
Syphilis (including chancroid),	5	5	..	4	1	89							
Epididymitis,	1	1	..	1	..	15	..	..	..	..	1		
Hydrocele,	1	1	..	1	..	27	..	..	..	..	1		
Stricture of urethra,	3	3	..	1	1	40	197	33½	3	..	1		Death from visceral disease.
Fecal fistula,	1	1	..	1	..	194	..	..	..	..	2		
Hæmorrhoids,	2	1	1	2	..	28½	..	..	..	..	2		
Cancer,	2	1	1	..	1	..	9	50	..	..	2		D'th from gangrene; fatty degeneration of heart.
Wound of ulnar nerve,	1	..	1	..	1	94	..	..	..	..	1		
Cystic tumour of axilla,	1	1	..	1	..	32	..	..	..	..	1		
Tonsillitis,	1	1	..	1	..	10							
Totals,	150	123	27	101	28	6	Av'ge 45.57	Av'ge 67.58	p'r c't 4.	7	4	2	12

TABLE II.—*Giving Statistics of Thirty Cases of Fracture, Treated from January 1st to March 31st, 1867.*

No.	Nature and cause of injury.	Sex, age, and occupation.	Method of treatment.	Result.	Duration in days.	Remarks.
1	Simple fracture of lower jaw, left side, from a blow	Male, aged 55, labourer	"Barton's bandage"	Recovered	16	Injury received 16 days before admission.
2	Simple fracture of clavicle at acromial end	Male, aged 6	Axillary pad, and 3d roller of Desault	Recovered	24	
3	Simple fracture (partial) of left clavicle, about middle; crushed between "bumpers" of railway train	Male, aged 23, labourer	Broad adhesive strips, axillary pad, and 3d roller of Desault	Improved	15	Became out patient; shortening of 4 in. irreducible deformity.
4	Simple fracture of left humerus, just above condyles; caught in belting of machinery	Female, aged 16, operative	Internal, right-angled splint	Recovered	38	Elbow somewhat stiff.
5	Simple fracture of left humerus, about middle; injured in blasting	Male, aged 35, labourer	At first, rest on pillow with extension by bandages and cooling lotions; afterwards splints	Recovered	91	Slight flesh wound; great swelling and vesication; delayed union.
6	Simple fractures of humerus at upper third, and of tibia and fibula at lower third	Female, aged 29	Internal angular splint and fracture box	Recovered	32	
7	Compound fractures of left humerus and right radius and ulna; run over by "dummy" engine	Male, aged 37, engine-driver	Amputation of both arms above elbows	Died	2½	Very severe scalp wounds; death apparently from cerebral injury.
8	Simple fracture of inner condyle of left humerus	Male, aged 14, foundry-boy	Internal angular splint	Recovered	31	
9	Compound fracture of left radius and ulna; forearm caught in "picker"	Male, aged 28, operative	Amputation of arm, just above elbow	Recovered	50	Slight attack of erysipelas; excellent stump.
10	Simple fracture of left radius and ulna	Female, aged 60	Internal angular and external straight splint, etc.	Recovered	70	Delayed union.
11	Simple fracture of left radius and ulna, just above wrist; "silver fork" deformity	Female, aged 62, bobbin-winder	"Bond's splint" and compresses	Recovered	33	
12	Simple fracture of radius at lower fifth	Female, aged 64	"Bond's splint" and compresses	Recovered	20	Injury received two weeks before admission.
13	Simple fracture of radius at middle	Male, aged 50	Two straight splints; afterwards "Bond's splint," etc.	Recovered	43	
14	Simple fracture of right radius at upper fifth	Male, aged 20, weaver	Internal right-angled splint	Recovered	28	
15	Simple fracture of radius.	Female, aged 40	Two straight splints	Recovered	38	
16	Simple fracture of left radius, at lower fifth	Male, aged 13, schoolboy	"Bond's splint" and compresses	Recovered	24	
17	Simple fracture of left radius at lower fifth	Male, aged 38, operative	"Bond's splint" and compresses	Improved	8	Made out-patient; doing well.
18	Compound (gunshot) fracture of left radius, about middle, with perforating wound of upper arm ball lodging beneath scapula.	Male, aged 28, seaman	Excision of two and a half inches of radius	Recovered	102	During convalescence suffered from jaundice and rheumatism.
19	Fracture of right radius, complicated with great laceration of hand from explosion of blast	Male, aged 30, miner	Amputation of forearm	Recovered	84	Powder burn of face, and loss of right eye.
20	Compound fracture of right ulna, with scalp wound; caught in belting of machinery	Male, aged 56, weaver	Wound closed with gauze and collodion; two straight splints	Recovered	27	Compound converted into simple fracture.
21	Simple fracture of left ulna, at lower third	Male, aged 35	Two straight splints; afterwards "Bond's splint," etc.	Recovered	134	Delayed union; ligaments of wrist much relaxed.

TABLE II.—Concluded.

No.	Nature and cause of injury.	Sex, age, and occupation.	Method of treatment.	Result.	Duration in days.	Remarks.
22	Simple fracture of olecranon; separation $\frac{1}{4}$ inch.	Male, aged 55, peddler	Compress and adhesive strips; obtuse angled splint	Recovered	26	Ligamentous union.
23	Simple fracture of patella	Male, aged 23	Straight posterior splint; limb elevated	Recovered	87	Ligamentous union; separation $\frac{1}{4}$ inch.
24	Simple fracture of tibia and fibula	Male, aged 82	Fracture box; afterwards splints of moulded pasteboard	Recovered	51	
25	Simple fracture of tibia and fibula; left side	Male, aged 6 schoolboy	Fracture box; afterwards pasteboard splints	Recovered	34	
26	Simple fracture of tibia and fibula	Male, aged 31	Fracture box; afterwards pasteboard splints	Recovered	51	
27	Simple fracture of right tibia and fibula	Male, aged 49, labourer	Fracture box; afterwards pasteboard splints	Recovered	54	
28	Simple fracture of tibia; lower third	Male, aged 8	Fracture box; afterwards pasteboard splints	Recovered	45	
29	Simple fracture of tibia; malleolus	Male, aged 25, carpenter	Fracture box; afterwards pasteboard splints	Recovered	49	
30	Compound (gunshot) fracture of seventh dorsal vertebra	Male, aged 27, policeman	Rest on water bed; simple dressing.	Died	60	Ball lodged in spinal cord.

TABLE III.—*Tabular view of Twenty-five Cases of Surgical Operations done in the Episcopal Hospital from Jan. 1st to March 31st, 1867.*

No.	Nature of operation.	Nature and duration of disease or injury.	Sex, age, occupation, &c., of patient.	Result of case.	Duration of after treatment	Remarks.
1	Amputat'n at right shoulder-joint.	Necrosis of humerus & disease of shoulder & elbow-joints; had lasted for several months.	Male, aged 14; schoolboy; American	Recovery	53 days	Operation by Larrey's method.
2	Double amputation; both arms above elbows	Compound, comminuted fractures of left humerus and right radius and ulna; immediate operation	Male, aged 37; eug.-driver; Englishman	Death	57 h'rs	Two very large contused wounds of scalp: death from cerebral injury sustained at time of accident.
3	Amputation of left arm, above elbow	Compound comminuted fracture of radius and ulna; immediate operation	Male, aged 25; operative; Irishman	Recovery	50 days	Circular operation.
4	Amputat'n of right forearm	Great laceration of hand, with fracture of radius; immediate operation	Male, aged 30; labourer; Irishman	Recovery	84 days	Oper'n by Teale's method: retained in hospital for injury of eye.
5	Amputat'n of middle finger of left hand	Frost-bite of several days' duration	Male, aged 19; boatman; Irishman	Recovery	13 days	Operation by Dr. Ingham (house surgeon).
6	Amputat'n of right leg below knee.	Caries of tibia; many years' duration	Male, aged 21; Irishman	Recovery	81 days	Antero-posterior flap operation; retained for general treatment.
7	Amputat'n of part of left foot	Caries of metatarsus & tarsus from a wound; duration, 7 months	Male, aged 50; farmer; American	Recovery	63 days	Operation by modification of Chopart's method.
8	Excision of left elbow-joint	Destructive inflammation of joint; nearly three months	Male, aged 56; blacksmith; American	Death	32 days	Death from exhaustion and ulceration of bladder.

TABLE III.—Concluded.

No.	Nature of operation.	Nature and duration of disease or injury.	Sex, age, occupation, &c. of patient.	Result of case.	Duration of after treatment.	Remarks.
9	Partial excision of left radius	Gunshot fracture; great comminution; immediate operation	Male, aged 28; seaman; American	Recovery	101 d'ys (healed in 57 days)	Resected ends, apparently united by fibrous band
10	Excision of head and neck of right femur	Hip-joint disease; nearly a year in duration	Male, aged 44 years; American	Remaining under treatment June 30, 1867	..	Operation by incision recommended by Heyfelder.
11	Excision of metatarsophalangeal joint of great toe, left foot	Necrosis of articulating surfaces; $\frac{1}{4}$ inch bone removed	Male, aged 50; gardener; German	Improvement	70 days	Operation by Dr. Ingham (house surgeon). Fistulous opening remained.
12	Ligation of right femoral artery	Popliteal aneurism; 12 days' duration	Male, aged 33; turner; American	Recovery	35 days	Left femoral tied 5 months previously by Dr. Packard.
13	Ligation of right femoral artery in middle third	Incipient aneurism in popliteal space	Male, aged 55; labourer; German	Death	44 days	Death from "pyæmia" developed two weeks after dropping of ligature.
14	Removal of dead bone	Necrosis of tibia; over 15 months' duration	Male, aged 16; shoemaker; German	Recovery	56 days	
15	Extraction of ball	Necrosis of femur from gunshot wound; nearly four years	Male, aged 26; dis. soldier; American	Remaining under treatment June 30, 1867	..	
16	Extirpation of toe nail	Onychia	Female, aged 12; American	Improvement	8 days	Operat'n by house surgeon.
17	Remov'l of "pterygium" from both eyes	Pterygium (double)	Male, aged 34; seaman; American	Recovery	21 days	
18	Puncture of testicle	Epididymitis (5 days)	Male, aged 33; seaman; Irishman	Recovery	15 days	Both sides successively affected.
19	Radical treatment of hydrocele (tr. iodine)	Hydrocele, six weeks	Male, aged 46; labourer; Irishman	Recovery	27 days	Previous operat'n by injection of <i>dilute</i> tr. iodine had failed.
20	"Perineal section" (Syme's operation)	Stricture (impermeable) of urethra, and perineal fistula; stricture of 5 years; acute symptoms 6 months	Male, aged 41; seaman; American	Death	57 days	Death from disease of kidneys and bladder; gluteal abscess; incisions made through cicatrix of operat'n 5 years before.
21	"Bushe's operation" for hæmorrhoids	Hæmorrhoids	Male, aged 50; labourer; Irishman	Recovery	16 days	
22	"Bushe's operation"	Hæmorrhoids	Female, aged 31; Irishwoman	Recovery	41 days	
23	Remov'l of tumour	Secondary cancer of axillary glands	Female, aged 48; American	Remaining under treatment June 30, 1867	..	Disease returned in cicatrix.
24	Remov'l of tumour	Primary cancer in right groin	Male, aged 60; miner; Welshman	Death	9 days	Death from traumatic gangrene; fatty heart.
25	Remov'l of tumour (sac partially excised, and wound painted with tr. iodine)	Cystic tumour of axilla (suppuration of sac) 2½ mos. duration	Male, aged 13; operative; American	Recovery	32 days	

ART. VI.—*Cases of Gunshot Wound of Neck, Arm, Forearm, Thigh; Tumour of Cervical Region.* By W. P. MOON, of Philadelphia, Pa.

SEVERAL articles have appeared in different medical journals, on errors in medical and surgical diagnosis during the late war, which have led me to refer to a number of cases which came under my care while executive officer of Mower U. S. A. Hospital.

To justly and fairly criticize the diagnosis and treatment of cases in military practice, all the attending circumstances should be known, and allowance be made for the unfavourable conditions under which the surgeon is often placed for the calm and thorough investigation of the cases brought before him. Thus, in time of action, when all is bustle and confusion, and where the life of the surgeon may not be free from danger, there may not be time or opportunity for the mature and careful examination of patients. This would be more liable to be the case in the hands of surgeons whose experience has been limited, and who may necessarily require *time* to thoroughly examine and carefully weigh all the attendant circumstances. I know, too well, that circumstances occur which conduce to haste even in general hospital practice. Thus, a battle occurs, and word is sent to a hospital capable of accommodating two or three thousand patients, to prepare room for all the house will hold. It is expected that each surgeon will have the care of two wards at least. The staff of medical officers has been reduced to supply some distant demand, and some of those remaining are compelled to take the charge of *three*, and in some instances *four* wards. Sometimes patients arrive *before* the message announcing their coming can reach the post. This has been the case in numbers of instances, and patients have arrived in hundreds, and in the night. All the attendants, surgeons, ward-masters, clerks, and nurses are required to be on hand to admit them. At times, instead of the requisite number to fill the hospital, three, four, or five hundred more are sent than there are beds in the wards. These must be provided for, and the corridors are filled. What is the consequence? All must be cared for as best they can, *temporarily*, until more surgeons can be had. Instead of having 120 or 150 men to care for, the surgeon may have 200 or 250; and some of them without the conveniences of a ward. Each case must be examined sufficiently to make out an intelligible, if not always a correct diagnosis for the anxious clerks to make out the "morning reports" and "lists" for the Medical Director, *on the following morning*. None but those who have passed through such scenes can appreciate them. The consequence is, that no other than a superficial examination is made, or can be made under such circumstances, and errors will very naturally occur.

There was another influence at work in most "field" or "general" hospital practice that had a tendency to lead to a superficial examination of

cases. The regulations, usually, were such that, in case of wounds, none were permitted to administer anesthetics with a view to a thorough examination, or to operate, except such as were appointed specifically for this purpose, either on account of their rank in the medical staff of the army, or their known experience and ability in civil practice. I do not hesitate to admit that this was just, and for the very best good of the soldier, but it left less inducement for the assistant or ward surgeons, aside from professional reasons, or a desire for personal improvement and wish to perform a solemn and onerous duty, to lead them to carefully examine and investigate the cases which came under their care. No matter how marked the attainments or how competent the surgeon, under such circumstances there was *comparatively* little opportunity for a practical use of his powers. To show how easily mistakes may occur even in the most competent hands, unless properly examined, I cite a single case in civil practice, before giving a report of my cases. I once knew a prominent surgeon to diagnose *ovarian* tumour *before* an examination under an anæsthetic, which was readily determined, by the use of ether, to be an accumulation of adipose tissue, entirely external to the abdominal cavity, which, by a contraction of the recti muscles, *simulated* ovarian tumour.

CASE I. *Gunshot wound of neck.*—W. B., private, Co. H, 82d Penna. Vols., was admitted to Mower Hospital, Nov. 18, 1864, for gunshot wound of neck, received at the battle of Bunker Hill, Va., Sept. 19, 1864. Ball entered near the anterior border of the sterno-cleido-mastoidens, about midway of the muscle, and made its exit near the spine of the seventh cervical vertebra, as was supposed, by examinations made on the field, at the general hospital at Fredericksburg, Va., and in our own hospital. There was plainly a wound of entrance in the front, and one of exit in the back of the neck, on a line with and about half an inch from the vertebra prominens. The patient was as positive the ball had passed through both neck and clothes from his own impressions of the injury as from the statements of different surgeons who had seen him.

Two months had elapsed since he was wounded, and the case seemed so clear, from the appearances and the history accompanying it, that there was no special examination made, nor any apparently required at this time. Besides, there were so many seriously wounded in the hospital who required immediate attention to avoid fearful risks, that his, with others like it, had necessarily to wait. This man had been under treatment so long—two months—without serious consequences resulting, that it was allowed to pass from our minds until circumstances brought it before us for advisement. When admitted the wounds were in a healthy condition, and the patient appeared otherwise well and hearty. In the course of three or four days he ran away and went home. Four weeks afterwards, his mother came to tell me he was at Manayunk, under the care of a physician, but drinking excessively. A guard was sent for him, and on his return he seemed in excellent health, aside from liquor, and evidently fit for duty, except that the wound of exit was still patulous, and discharging a small amount of pus. The entrance wound was entirely closed. It was evident that some source of irritation remained, acting as a foreign body

in all probability ; I supposed a necrosed portion of the vertebra. An exploration was made, and I discovered, with the ordinary probe, what I took to be a missile instead of bone. Using a Nélaton probe, it showed a lead ball near the left side of the vertebra prominens, imbedded in the muscles. Upon removing the bullet it proved to be of that kind which is furnished with a metal button or plug, fitted to the large end of the ball, and made to suit the calibre of the gun. They were made in Europe, if I remember correctly, and not much used here. *This button had passed through the neck and clothes, leaving the ball behind in the neck.* There was little difficulty in extracting it, no anæsthetic being required. The wound soon healed, and in the course of a few days the man was sent to his regiment.

It may seem a very simple thing to find the bullet in this man's neck, after it was done ; but how many would have thought of looking for it there upon seeing him on the field, or in the first hospital, with the wounds of entrance and exit both in the neck and clothes ? Not one in a thousand would have hesitated upon deciding that the missile had gone through the neck. From post to post he carries the history of his case with him, and it is too generally taken for granted ; and the true state of the case is only brought to view by a certain train of circumstances as brought out by the account given above. This is the history of many other cases.

CASE II. *Gunshot wound of forearm.*—J. W., private, Co. D, 2d N. Y. Cavalry, was admitted to Mower Hospital Nov. 17, 1864, from Cavalry Corps Hospital, for "gunshot wound of right forearm," received at the battle of Winchester, Nov. 12, '64. Ball entered at upper third of inner face of forearm, passing upwards and slightly outwards, lodging in the anterior muscles of the arm. This man was one of those strong-headed, self-willed men, who make good soldiers but poor patients, if they get erroneous impressions respecting their illness or wounds. He had received an impression, from all previous examinations made on the field and at Cavalry Corps Hospital, by good surgeons probably, that the injury was simply "a flesh wound," which to all outward appearance it was. His ward surgeon received the same impression, and he had had considerable experience in gunshot wounds in both field and hospital practice. It is true, he had not made a proper examination, viz., under anæsthesia, for the reasons given before. His present impression still further fortified the patient in his former opinion. My impression at first, even by a superficial examination, happened to differ from that of those who had previously seen the case, from the appearance of the arm, the direction of the ball, and from the fact that the missile still remained in the arm undetected. Upon a closer investigation I thought I detected a fracture of the inner condyle of the humerus. The patient could not believe that such was the condition of things, and very reluctantly gave his consent to an examination under chloroform only by our promising not to operate upon him further than to ascertain the real condition of the wound.

Upon investigation it was ascertained that the inner condyle of the humerus had been shattered into several fragments, and the bullet had

passed up into the anterior muscles of the arm, beyond the reach of any form of probe. From the direction in which the bullet had passed there was every probability that the vessels of the arm and forearm were injured, and that secondary hemorrhage would supervene. Such of the spiculae of bone as were sufficiently detached, were removed, and an incision made large enough, it was thought, to insure a free discharge of the suppuration which must necessarily follow such an injury. Until this thorough investigation had been made no adequate conception of the gravity of the injury had been entertained by those previously examining the case. Only by such an examination could any one determine the true character and extent of the wound. And this is the point I desire to make in this case, as in others—not as a criticism—for had any other surgeon perceived, with nearly a certainty, as I did, a fracture, besides being impressed with the seriousness of the injury, he would himself have insisted upon a proper examination to ascertain to a *certainty* the nature of the wound, or have pointed out his convictions to others who had proper authority to examine the case. As I had promised the man that I would not amputate, or operate more than was necessary to arrive at a correct diagnosis without his consent, he was allowed to come from under the anæsthetic influence. As it was advisable to endeavour to remove the ball, and take out the remaining fragments of bone, he was told what condition he was in, and what was desirable to be done. His self-willed nature now exhibited itself, for no argument could induce him to submit to any further interference, and he was left with a full understanding that he must *alone* be responsible for any future undue danger or suffering.

Nov. 19. Only two days after, the arm began to swell rapidly, owing to the active inflammatory process developing. This was combated with lead-water and opium applications, accompanied with constitutional treatment, by quinia and tr. ferri chlor. Suppuration as rapidly followed, and I insisted upon making free incisions on the day following, to allow of drainage for the accumulations of pus. Stimulation by means of milk-punch was now added to the treatment, three times a day.

Though of an iron constitution, his system soon began to give way to the drain upon him, and too late he came to realize something of his condition. At his own request, I promised to have a consultation in the morning following. At 9½ o'clock P. M., November 21, however, we were called suddenly to see him, as hemorrhage had occurred. When I reached the ward, the arm was enormously enlarged from the infiltration of blood into the subjacent tissues, very little having escaped from the wound. The agony endured was so intense that he was anxious now to have anything done that would relieve him of pain. I decided to amputate at once, as the more likely means of saving the man's life, which was done by antero-posterior skin flaps, with circular incision of the muscles, a trifle above the middle third of the arm. Anæsthetic, chloroform. Reaction very slow, much blood having been lost previous to the operation. Five ligatures were only necessary. Upon making my anterior flap, the blood flew from the cephalic vein for four or five feet for an instant, until controlled by my finger, and we were obliged to put a ligature around it before proceeding with the operation.

Upon examining the arm after amputation, a small rifle-ball was found imbedded in the anterior muscles, having shattered the internal condyle into ten or twelve fragments, and laid open the brachial artery for some four inches from a point three-quarters of an inch above the bifurcation of

the ulnar and radial arteries. The specimen of artery, with eight fragments of bone and the missile, are before me, mute but impressive reminders of that bloody scene by candle-light, so many of which we were called to witness during the war.

The case progressed favourably for ten days, when pyæmic symptoms intervened, heralded by chills, followed by diarrhœa, and a low fever with hypostatic pneumonia hurrying off the patient. Died on the sixteenth day after the operation.

Had the exact character of this man's injury been discovered at first, and had he allowed surgical interference thus early, who knows but a valuable life might have been saved and much suffering prevented? But, on the other hand, who can judge whether any of those who first saw the case were culpable, without being cognizant of all the circumstances under which the case was seen? There may have been reasons in all the occasions which prevented any other than a mere superficial investigation of this man's condition, satisfactory to all who saw him, why the exact character of the injury was not developed.

CASE III. *Gunshot wound of arm and forearm.*—J. D., corp., Co. —, Reg. —, was admitted for gunshot wound of right arm and forearm. The ball entered near the middle third, radial side of forearm, while in flexed position, splintering off a small fragment of the anterior border of the radius, and producing a considerable flesh-wound. Passing across the forearm, it entered the arm about two and a half inches above the internal condyle, making a slight flesh-wound; so slight, indeed, as to demand little attention, as the principal seat of injury and suffering was attributed to the lower wound. Both were open, and there were two inconsiderable hemorrhages from muscular branches in the upper wound. This gave no trouble, and healed rapidly and kindly; but that of the forearm was more tardy, becoming very much contracted in the course of the wound.

The patient suffered the most extreme neuralgic hyperæsthesia, locating his suffering principally along the radial side of the forearm, although the ulnar side was included, and in the hand and fingers—all of them, without distinction. The contraction of wound in the forearm increased, and the tissues of the whole arm, to the finger ends, became shrunken and shrivelled, resembling more that of a "washerwoman's" than anything else. The constant application of water-dressings was one cause of the shrivelled condition, but the agony endured, with loss of sleep and want of appetite, was the main cause of the excessive emaciation accompanying the nervous complications. Despite all local and constitutional treatment, including hypodermic injections of morphia sulph., very little relief could be obtained. The arm and forearm were becoming a mere skeleton, and the man's system was beginning to give way. The case had been under close observement for some weeks by the ward surgeon, Dr. Smith, and had been seen by Dr. Morton and myself several times, and the question of division or excision of a portion of the radial nerve, for the purpose of relieving the distressing symptoms and attempting to save the arm, was considered, and excision above the cicatrix in the forearm finally decided upon. The patient was unwilling to submit to amputation, which it was feared must be done eventually. The upper wound had made so little impression upon our

minds that it had been entirely forgotten, the character and position of the wound in the forearm, with the location of pain, leading to the conviction that the injury to the radial nerve was the main cause of most of the suffering. An incision sufficiently long was made by Dr. Morton directly over the radial nerve, cutting through a large portion of the cicatrix of the wound, exposing the nerve, a section of which was excised immediately above the track of the injury. The nerve was not bound fast in the cicatrix, and, with the exception of slight contraction of its calibre in the immediate vicinity of the wound, there was no perceptible abnormality in it. There was no direct injury done it. Very little relief followed the operation. A few days after, being convinced that nothing short of amputation would afford relief, it was decided to amputate the arm, the patient as anxious for it now as before unwilling. A Teal operation was made by Dr. Smith, which did well. Upon dissecting the arm after amputation, the ulnar nerve was found to have been also injured at the point where the ball emerged above the elbow.

The division of the radial, had it been ever so successful, could not have entirely relieved the difficulty, as both outer and inner sides of the hand and forearm were involved. Nothing short of amputation could do this, under such circumstances, since both nerves were at fault. An exsection of both would have rendered the limb a somewhat useless appendage. The median nerve was not involved. Comments at the time, owing to the failure of the operation to relieve by a section of the nerve, were made, but, in all probability, were a similar case to present itself, under just such circumstances, united to the unwillingness of the patient to submit to a radical cure, the same course would be pursued again.

Dr. Agnew informs me that he operated upon a patient, for neuralgia, by exsection of a portion of the inferior branch of the fifth pair of nerves in the lower maxilla. Instant and complete relief followed, and the patient continued free from suffering for about two years, when the complaint returned with increased frequency and violence. In another case, where amputation had been performed for an injury to the elbow, and a second had become necessary on account of neurosis, with little relief following the second amputation, it was decided, by a majority of the surgical staff at the Pennsylvania Hospital, to exsect the diseased nerves. It was found, upon tracing up these, that they were affected by inflammation, as evinced by the change of structure peculiar to the knotty neuromatous appearance, all the way up the arm and above the axillary plexus. Dr. Agnew's opinion is that the seat of the disease in the severe cases lies in the nerve centres, hence the failure so often, in excision of the branches, to produce permanent relief.

Prof. Gross, in his work on surgery, says:—

“Section and excision of the affected nerve have often been practised for the cure of neuralgia, with results, however, by no means always satisfactory. Indeed, there is reason to believe, from the facts that have been published upon the subject by various surgeons, that both operations have generally proved unsuccessful; in many temporary relief ensued, but in nearly all the disease

ultimately recurred, with its former violence. I have myself performed a number of these operations, sometimes merely cutting the affected nerve across, and at other times excising a considerable portion of it, but the result has nearly always been unsatisfactory."

Some other American surgeons are more sanguine as to a favourable result from these operations, but there are not sufficient data to warrant anything like certainty in any given case.

CASE IV. *Tumour in cervical region.*—H. C., private, Co. C, 106th Reg. N. Y. Vols., was admitted to hospital Sept. 12, 1864, for a tumour of the neck, of about an inch and a quarter in diameter, situated in the upper portion of the great anterior triangle. Patient first noticed it about one year previous to admission. At that time it grew very slowly, but is now increasing more rapidly. For two or three months past he has been subject to paroxysms of dyspnœa, resembling asthma, which gradually increase in violence, and were ascribed to the pressure occasioned by the tumour. Relief was usually obtained by the inhalation of ether, and the use of warm, moist cloths applied to the chest. With the exception of the asthmatic symptoms, the general health seemed good; he had occasionally slight diarrhœa, which was easily controlled. The mass was evidently encroaching upon the larynx and œsophagus laterally, and producing pressure upon the par vagum, thus, in all probability, inducing these attacks of dyspnœa. Considerable pulsation could be felt on the application of the fingers to the tumour, which was presumed to be dependent upon the pulsations of the underlying carotid.

After several consultations, it was determined to attempt an operation for the removal of the tumour, and the patient informed of the fact that this was the only hope there was of relief, though by no means a certain cure. He had at all times a great dread of an operation, and did not think he could live long without one. He was given a furlough for a month, to go home and consult his friends upon the subject. He received no encouragement to delay an operation, but it was with the greatest difficulty he could be induced to consent, though fully convinced of his danger. He appeared to have as great a dread of the administration of chloroform as of any part of the operation. The tumour had grown, during the three months it had been under observation, to fully twice or three times as large as when first seen by us, and there seemed to be no doubt of the result if it was allowed to remain. The distress consequent upon it became more and more constant and severe, affording little rest day or night, and the patient began to wear a haggard and anxious countenance. He finally consented to an operation.

Dec. 13. The patient having been thoroughly etherized, I made an incision over the centre of the tumour, in the direction of the sterno-cleido-mastoideus, and carefully dissected up one tissue after another until the membrane or cyst in which the tumour was inclosed was brought to view. This enveloping membrane was very vascular, being ramified with a network of enlarged veins. The tumour had the hard feel common to that of the fibroid class. During the operation, as we were examining the body, and had partially enucleated it, getting nearly down to its attachment, the patient was seized with vomiting, and the retching caused a rupture of two of the larger superficial veins. These were ligated, but no sooner were they secured than another gave way; the retching increased, and the hemorrhage became so great that we were compelled to desist from any further effort,

for the time being, at any rate. After securing the open veins, it was decided to desist, close the wound by sutures and strips of plaster, and *hope* for a favourable termination either by union by first intention or by suppuration.

For some days the case progressed so well, that we had strong hopes of a favourable result. But I will give the progress of the case from the report of Dr. Fell, to whose excellent care and management the man was confided.

15th. Has œdematous erysipelas, involving upper portion of chest and right side of neck. Treated by tinct. iodine externally, tinct. ferri chlor., Dover's powder, etc., internally.

18th. Patient much better for the last three days. His bowels have been open three times in the last twenty-four hours. Wound closed up, except at upper and lower extremity of the incision. Out of these openings healthy pus discharged freely, but there is a fetid odour about the wound which excites unpleasant suspicions of sloughing. It was hoped, however, that the inflammation had been sufficient to cause a final obliteration of the tumour, and might thus be successful. Since the 15th, tongue coated, white in the middle, but remains moist.

Everything seemed as favourable as could be expected until the morning of the 26th inst., when secondary hemorrhage to the amount of about thirty fluidounces took place, which was arrested by using charpie and compression. Consultation and careful examination of the parts after opening the wound made by Drs. Morton and Moon. It could not be precisely ascertained from what vessel the hemorrhage proceeded, on account of the altered condition of the parts. It was determined to ligate the primitive carotid, to insure against another hemorrhage, which it was thought would prove fatal. This was accordingly done by Dr. Morton, assisted by Dr. Moon. Ligature applied about one inch and a quarter above its origin from the innominate. The tumour had nearly disappeared, and it was now to be seen that the portion remaining consisted of a calcareous deposit attached to the thyroid cartilage. The veins covering it, with the entire cyst, had sloughed away.

27th. Patient doing well; wound looks dry, and disposed to slough; very little pus formed. Dressed with diluted solution of chlorinated soda.

28th. Not much change.

29th. Partial paralysis of left side (tumour on right); wound shows some disposition to clean out; pulse 108; tongue dry and coated; nausea, with some vomiting; complains of great thirst. Wound dressed with sol. permanganate of potassa. Slight delirium, with tendency to diarrhœa, which was restrained by an opiate enema.

30th. Patient better; pulse 90; no vomiting and no diarrhœa; wound cleaning off; takes his cream, beef-essence, and brandy without difficulty.

31st. Wound presents healthy granulations. Had a rigor this morning, followed by fever and perspiration, the precursor of pyæmia.

Jan. 1, 1865. From this time a decided change for the worse became evident, and he continued to gradually sink until the morning of the 5th, when he died, at 5 o'clock A.M.

Post-mortem revealed the usual condition of pyæmic patients. An organized clot was found occupying the carotid to within a few lines of the innominate, and also as high up as was examined, about an inch and a half above the bifurcation, which occurred at the usual point. Pus had dissected down the sheath of the vessels nearly to the pericardium. Brain not examined. The ligature placed upon the carotid had ulcerated through. Wound healthy until the last.

The lesson we learned by this sad experience was one not soon to be forgotten, and we wish to put it upon record, namely, not to be over-desirous of operating upon tumours of the cervical region, or too sanguine of a favourable prognosis in such cases, that others may take warning of our misfortune.

CASE V. *Gunshot wound of thigh.*—S. M., private, Co. H, 110th Reg. Pa. Vols., arrived at Mower, April 25, 1864, from Camden Street Hospital, Baltimore. Received gunshot wound in left thigh, five inches above knee-joint, at battle of Gettysburg, July 2, 1863. The ball impinged against the femur, injuring but not fracturing it. Extensive necrosis followed, and on the 11th of August, 1864, I removed a large portion of the external and central or middle third of the bone. Five weeks later the wound began again to evince signs of still further development of necrosis. Patient failing under the increasing drain, it was determined, Nov. 9, to relieve him by a removal of any remaining necrosis. The former wound was enlarged, and the diseased portion found to involve the greater portion of the femur, new bone having been thrown out, nearly surrounding the original shaft. It was desirable and proper to remove the old bone which was loose, but the *manner* in which the effort was made to remove it constitutes the point which is open to criticism in the case. In endeavouring to get away the old, I did not remove enough of the new structure to allow the sequestrum to be taken out without using too great force in the attempt. As a result, *fracture of the new bone occurred*, and amputation followed, as a necessity.

Dr. Foggo, the surgeon in charge of the case, in making a record of it, has very considerably avoided any remark that would lead to a reflection upon the operator as to the reason for amputation. He says, after detailing the condition of the patient: "Nov. 9. Cut down upon the femur, and found it in such a state as to render amputation necessary. Amputation at 3 P. M., in middle third of thigh. Operation performed by Dr. Moon, executive officer." This was very kind in Dr. F., but I was then, as I am now, free to confess that an error was committed by the use of too much force in trying to accomplish my object rather than sacrifice a portion of the new structure, and I put the conviction on record, for the benefit of others, hoping also to profit myself by keeping *just such* mistakes in lively remembrance. Such are some of the sad but useful experiences through which we have had to pass during military hospital life.

Much charity is due the young and inexperienced surgeon or physician on the part of his seniors. The general public have sufficient want of confidence in his ability and judgment to cause him many discouragements and heartburnings, without the addition of the cold shoulder or undue reflections which are sometimes made by his more favoured brethren, who have had large and varied experience, many times the unsuccessful cases of whose practice may not have received public record.

ART. VII.—*Functional Hemiplegia.* By J. H. KIDDER, M. D., Asst. Surgeon U. S. Navy.

THE two following cases interested me much while under observation, and I have reported them in the hope that some points will be found in them which will repay attention, and perhaps aid an investigation into the cause and pathology of the disease.

CASE I. *Progressive locomotor ataxia; partial insanity; left hemiplegia; death.*—Wm. K., coal heaver, aged 30, born in Ireland; admitted into the Naval Hospital, Philadelphia, September 12, 1866, as affected with "partial paralysis." This patient was wounded during the first attack on Fort Fisher, in December, 1864. He was at that time in the marine corps, serving on the U. S. S. Junia. His statement is, that while engaged in loading the 100-pounder pivot gun of the Junia, the piece exploded, the concussion rendering him unconscious, and one of the fragments of the gun fracturing the right tibia. He was finally discharged from the service; reshipped for duty at League Island in November, 1865, and has performed light duty until within a few days past, when he became unfit for duty. [Indorsement upon Hospital Ticket, dated September 8, 1866.]

September 15. Patient undersized, dark and rather spare; intellect cloudy, and memory much impaired. He contradicts himself frequently when questioned, and can give no reliable account of himself or his symptoms. Speech thick, but not unintelligible; gait tottering; tactile sensibility diminished, particularly on left side. His wife states that he has occasional attacks of raving mania, during which he is quite violent. Physical examination detects no organic disease of the viscera. Complains of pain along the spine.

20th. For some days past patient has shown a childish malice, annoying the servants of the house, and deriding the complaints of other patients. Last night he had a paroxysm of violent insanity, yelling and throwing himself against the walls of the room in which he was confined. Was quieted at length by valerian and morphia. He refuses to take medicine, and will avoid swallowing with much cunning, unless carefully watched.

October 3. Had another paroxysm last night, similar to the previous, but less violent; no systematic course of treatment has yet been adopted.

14th. Ordered R.—Strychniæ gr. j; mic. panis, q. s. ut ft. pil. No. xv. S.—One three times a day.

23d. Discontinue pills, no advantage having followed their use.

November 7. Continues to be exceedingly troublesome, annoying all the inmates of the hospital. For the past two weeks he has been growing more feeble, although still able to get about; is also losing his speech, being far less intelligible than at date of admission.

16th. Complains of scalding in micturition; glans penis is found to be inflamed, especially about the meatus; shirt stained with semen. He has to be carefully watched to prevent unseemly exhibitions of salacity. R.—Gum. camphoræ, gr. x. Ft. pil. No. x. S.—Twice a day.

23d. More reasonable and orderly; continue pills one per day.

December 7. Blindfolded the patient, and found him unable to stand without support. On attempting to walk he moves his legs and arms spas-

modically, and with an entirely disproportionate degree of violence, tottering and sprawling about. Notwithstanding, however, his apparent weakness, as manifested in his tottering walk, the grasp of his hand can scarcely be borne, nor can his limbs be flexed against his will.

Diagnosis.—Progressive locomotor ataxia.

28th. There is no longer any reasonable doubt that the patient masturbates. Cantharidal collodion to external surface of prepuce.

February 7. By keeping the penis constantly somewhat sore, masturbation has been effectually prevented. His disease has apparently made no advance, and his general health has improved. Treatment has been mainly confined to hygienic measures, systematic exercise, &c. R.—Potasii bromidi, ʒj; aquæ, fʒij.—M. S.—Teaspoonful three times a day. Subject to insomnia, for which small doses of morphia are occasionally prescribed. Slight spermatorrhœa persists.

13th. Sphincters have ceased to act; patient passes his urine and feces in bed. Discharge from urethra profuse and involuntary.

24th. No improvement. Discontinue bromide of potassium.

25th. Patient less rational; speech has become absolutely unintelligible. Tactile sensibility seems to be entirely restored. Inco-ordination of muscular action gradually increasing, having extended to the muscles regulating speech, which were slightly or not at all affected at the time of his admission. On being told to touch his nose, the patient will lay his finger upon his scalp or chin, perhaps; he cannot button his clothing, while his actual strength, although impaired, is much greater than would be supposed from his ineffectual efforts.

26th. R.—Argenti nitratis, gr. ij. Mic. panis q. s. ut ft. pil. No. xxiv. S.—One three times a day. Also R.—Tinct. cantharidis, gtt. xvj. S.—At bedtime.

27th. Has suddenly grown much worse. Some weakness of the left side has been noticed for several days, and yesterday afternoon he became totally unable to walk or stand, the left leg having become nearly powerless. The leg is more affected than the arm, contrary to the rule in cases of hemiplegia, but in neither is paralysis complete. Sensibility is somewhat diminished on the affected side. There was neither strabismus, coma, nor other sign of apoplexy. Complete incontinence of urine and feces.

March 6. Gradually improving. Continue treatment.

20th. Zinci sulphatis, ext. conii, āā ʒss; mic. panis q. s. ut ft. pil. No. xx. S.—One every day at 2 P. M. Discontinue nitrate of silver. Can walk a short distance, although still weak on left side.

31st. The main disease (ataxy) is steadily progressing; hemiplegia continues to diminish. Take pills of March 26th twice a day.

April 6. Continue. Seems a little more rational and steady.

12th. Discontinue pills. No permanent improvement. R.—Tinct. valerianæ, fʒ three times a day.

14th. Continues to grow feebler from day to day. Suspend all treatment.

24th. No material change until this morning at 8 o'clock, when, while sitting in an arm chair, he was suddenly attacked with left hemiplegia. The previous partial attack, from which he had almost recovered, was much less complete than the present seizure. Face not affected, except the left pupil is somewhat dilated, and the conjunctiva injected. Breathing short, hurried, and laborious, but not stertorous. Patient appears to be bewildered, but is not insensible. Skin warm, and profuse diaphoresis;

pulse weak and rather excited. Ordered whiskey in small and frequent doses. There was no sign pointing to apoplexy.

25th. Died at one o'clock this morning of asthenia. Owing to the objections of the patient's relatives no complete post-mortem examination could be had. The brain was examined, however, and found to be of normal size and consistence. Pia mater rather congested, with a slight deposit of lymph beneath the arachnoid superiorly and anteriorly. The arachnoid contained rather more fluid than is usual, and venous bleeding from the sinuses was abnormally free. There was no extravasation of blood within the brain substance, nor did the ventricles contain an unusual amount of fluid. The septum lucidum was perhaps a little softened, and the floor of the fourth ventricle presented two or three lines of congestion. No cause for the hemiplegia was discovered, nor any abnormality, except the absence of the pineal gland. I have frequently seen as much peripheral congestion and exudation, when, during life, there had been no symptoms to direct attention to the brain.

Remarks.—For some time after admission this patient's symptoms were not so well marked as to lead to a suspicion of anything beyond the diagnosis of the hospital ticket. The great rarity of the disease, and the meagre accounts of it given in most of our text-books, aided the error, and the crucial test of blindfolding the patient was not applied until nearly three months after admission. When attention was once properly directed, however, error was impossible. The definition¹ of the discoverer of the disease could not have been better met. Trousseau's description is decidedly the best available.² He looks upon paroxysmal pain, occurring in various localities, and of brief duration, as one of the most important of the premonitory symptoms; yet, with the exception of pain in the back, over the dorso-lumbar spine, this patient presented no such symptom. "Nocturnal³ incontinence and spermatorrhœa" were so excessive as to lead to the suspicion of masturbation, and to this the disease was at first attributed; although the continuance of the symptoms, after the vice was effectually prevented, cast a doubt upon this supposition. The testimony of Dr. Chas. West gave additional strength to this doubt, and to the surmise that the vice was rather a consequence than cause. "I have⁴ not in the whole of my practice seen convulsions, epilepsy, or idiocy *induced* by masturbation in any child of either sex, a statement, I need hardly add, widely different from the denial that epileptics or idiots may, and not seldom do, masturbate. Neither have I seen any instance in which hysteria, epilepsy, or insanity in women after puberty, was *due* to masturbation as its efficient cause." It

¹ "Progressive abolition of the faculty of co-ordinating movements and apparent paralysis, contrasting with the integrity of the muscular power."—Duchenne (de Boulogne) *De l'Electrization localisée*, etc., second ed., Paris, 1861, p. 547. (Quoted by Trousseau.)

² Lectures upon Clinical Medicine, Philadelphia, 1866, p. 147.

³ Op. cit., p. 148.

⁴ "Clitoridectomy," Am. Journ. Med. Sci., Jan. 1867, p. 263.

seems fair to group ataxy with the diseases mentioned by Dr. West, in which case his assertion becomes applicable to it as well. There was no evidence of an hereditary predisposition to nervous disorders in K.'s case, nor could the disease be plausibly traced to any event in his history, as a cause.

The cause of his hemiplegia remains in as much doubt as that of the ataxy. A rather significant symptom was the inequality of the pupils. The experiments of Claude Bernard have shown that division of the cervical sympathetic nerve and irritation of the upper extremity are followed by dilatation of the pupil upon the same side; vascular congestion and increased temperature of the eyeball, which followed division of the nerve, disappearing during its irritation. From the frequency of this symptom Duchenne concluded that the sympathetic nerve must be diseased in ataxy.

Treatment, which was entirely experimental, was not attended by even the temporary amendment which usually follows the administration of each new drug in epilepsy and kindred diseases. The metallic oxides, vegetable antispasmodics (so called), and the bromide of potassium, which now enjoys so much popularity, alike failed utterly; and during the periods of no treatment the patient did not sink more rapidly than before.

It is much to be regretted that no examination of the spinal cord was permitted in this case. Doubtless degeneration of the posterior columns, where Profs. Brown-Séquard and Trousseau locate the co-ordinating faculty, would have been discovered as in similar cases. The case was peculiarly interesting pathologically, in that it was so entirely free from visceral complications.

The hemiplegia, which was the immediate cause of death, was, in my opinion, *functional*, if such a thing be possible, akin to the cases of "apoplectiform cerebral congestion" described by Trousseau.¹ Prof. Flint, while asserting that "functional hemiplegia is rare,"² admits the possibility of its occurrence; and the next case to be given, although no post-mortem was allowed, and demonstration was therefore impossible, presented rational signs, which, if I do not misinterpret them, scarcely leave room for doubt that it was of the same nature. In considering the possibility of this affection, it should be remembered that the patient (K.) had already recovered from a slighter attack of hemiplegia, unattended by apoplectic symptoms. (*Vide supra*, under date of February 27th.)

CASE II. *Right hemiplegia; death.*—T., beneficiary, aged 70, born in New York, admitted March 23, 1867, at 7.30 P. M., for right hemiplegia. T. has been under treatment several times for the effects of alcohol, having been an incorrigible drunkard. He was admitted August 5, 1866, for fracture of left humerus, which, although the reopening of an old fracture of forty years' standing, united favourably in a pasteboard apparatus, and the patient was discharged October 8th following, without shortening or de-

¹ Op. cit. Lect. I.

² Practice of Medicine, p. 565.

formity. Patient was much bloated, and subject to attacks of urticaria of extraordinary severity. By constant and long continued dram drinking his constitution, originally very robust as he stated, had become entirely shattered. On the evening of March 23d he was observed to be unsteady in his movements at the tea table, overturning articles in reach, &c. Shortly afterward he was discovered lying near his bed on the floor and helpless. When I saw him, a few minutes later, he was lying upon his bed, streaming with perspiration so that his clothing was soaked, his right arm and leg helpless and face distorted, the angle of the mouth being drawn to the *left* side. There was no ptosis, but marked feebleness of the pharyngeal and glossal muscles, making it difficult for him to swallow. The muscles of the neck (sterno-mastoid, &c.) appeared to be not altogether incapable of contracting, although apparently more feeble on the affected side. He could not articulate distinctly any words requiring much movement of the tongue, the labial sounds remaining quite distinct; thus, in trying to say "remember," he could only say "member," articulating the labials and omitting the linguals and palatals. There was no sign of effusion or hemorrhage into the brain substance, his mind being perfectly clear. Yet the lesion, if any existed, must have been as high as the fourth ventricle, since the right hypoglossal nerve was affected as well as the portio dura of the seventh, which also takes its deep origin from the side of that ventricle.¹ I say, "if any existed," because the facial paralysis was upon the same side as that of the body, namely, the right, which would scarcely have been the case had any destruction of brain tissue existed above the decussation of the medulla oblongata. The patient could not expectorate, and the atony of the organic muscles supplied by the sympathetic nerve, so plainly indicated by his profuse diaphoresis, seemed also to extend to the mucous membrane lining the lung-cells and bronchi, for a most profuse transudation of muco-serous fluid clogged the air-passages, and, owing to paralysis of the right side of the diaphragm, could not be expectorated. Placing a hand upon either side of the chest, the right ribs in rising could be felt to drag behind the left, as though with great effort, but rose nevertheless. The intercostal muscles, therefore, may have been paralyzed, while the accessory muscles of respiration, to which the spinal accessory nerve is distributed, were intact. Paralysis of the right arm and leg was complete. The abdomen rose and fell loosely with each respiratory act. The diaphragm, owing to paralysis of the right phrenic nerve, was powerless, and remained loose and flaccid, puffed downward during inspiration and sucked upward in expiration, these actions being performed altogether by the accessory muscles. The patient got mxx of aromatic sulphuric acid three times, and $\text{f\ij}$ of whiskey, without benefit. Mucus continued to accumulate in the air-passages, and he died March 24th, at ten minutes past noon. His wife demanding the body, no autopsy was practicable.

Remarks.—The remote cause of death is doubtless to be found in the patient's mode of life, which rendered him peculiarly liable to injuries of

¹ It should not be forgotten, however, that the inferior cerebellar artery passes between the filaments of the hypoglossal nerve in its course. Supposing a paralysis of the right sympathetic and consequent paresis of the vaso-motor nerves, the relaxation of the muscular coat of the artery would necessarily be followed by distension, causing a pressure upon the nerve which *might* account for its impaired function (for the tongue and pharynx were not totally paralyzed, *vid supra*).

the nervous system, and incapable of repairing their damages. The pathology remains obscure, the more so that no examination was allowed. I strongly doubt, however, from the clinical history the existence of any appreciable lesion to the brain. Case I. was quite similar to this in late clinical history, and no effusion or hemorrhage was found in that brain. There was apparently no paralysis of the 1st, 2d, 3d, 4th, 5th, or 6th cranial nerves, marked *right* paralysis of the portio dura, and none of the portio mollis of the 7th pair. Since the larynx seemed to move normally, the recurrent laryngeal was probably not affected, nor was there other evidence of injury to the pneumogastric or spinal accessory (which sends branches to the sterno-mastoid and trapezius muscles). The hypoglossal was very much disabled, hence the difficulty of speaking and swallowing. Probably all the spinal nerves of the right side were more or less affected. Since the hypoglossal and portio dura were the only cranial nerves injured, and since their deep origins are situated very near together on the floor of the fourth ventricle, congestion of that locality might be conjectured. *Effusion* into the fourth ventricle should, I imagine, cause injury alike to the nerves of both sides. The sympathetic system was evidently gravely at fault. In the lack of demonstrable lesions I am strongly inclined to surmise that the great sympathetic system has far more to do with these functional attacks of hemiplegia than is generally supposed. Even admitting Trousseau's views¹ upon "apoplectiform cerebral congestion," there is plainly no agent so capable of producing local congestions as are the vasomotor nerves which govern the unstriped muscles and preserve *tone* of the vessels. This attack did not come on suddenly, but showed its beginning some minutes before its completion, just as the peristaltic motions of the intestines and other operations of organic life proceed less rapidly than those governed by the cerebro-spinal system. The sympathetic ganglia of one side are far more distinct from those of the other than are the lateral halves of the brain and cord, so that the unilateral character of the affection is no objection to the supposed agency of the sympathetic. In this case the minute unstriped muscles of the vascular system and of the bronchi and bronchioles were relaxed, the tubes had "lost their tone;" profuse sweating and clogging of the lungs followed. Now, are not these precisely the results which should follow paralysis of the sympathetic? From the same cause could readily follow an unilateral relaxation and consequent congestion of the vessels on the floor of the fourth ventricle and on the right side of the brain: thus the hypoglossal and portio dura nerves may have been compressed and paresis of their filaments have followed. In the same way might be explained the injury to the spinal nerves, the weakest point in the whole supposition being the fact that *any* nerves escaped. As to what produces the injury to the sympathetic centres, I must confess inability to start even an hypothesis.

October 25, 1867.

¹ Op. cit. Lect. I.

ART. VIII.—*Cases of Malformation: with Reflections on Congenital Abnormalities.* I. *Malformed Duodenum.* II. *Imperforated Urethra; Operation; Cure.* III. *Congenital Amaurosis.* By MIDDLETON MICHEL, M. D., of Charleston, South Carolina.

UNTIL embryology was fully understood, deviations of development were referred to insufficient influences on the one hand, or simply brought within the precincts of accident or chance. Now, on the contrary, they have come to be distinctly referable to laws of embryonal evolution by which they are explained, through *excess*, or *deficiency* of development, *inclusion* of germs, or *disease* of the ovum.

Illustrations of some of these points, and a brief examination of the influence supposed to be exercised by the mother's imagination upon the fœtus, occur in the following cases:—

CASE I. *Abnormal state of the duodenum.*—After the birth of a well-formed child at term, we found the ordinary doses of oil were invariably ejected, and that the bowels were not acted upon. Injections gave no relief, the child took the breast, but almost immediately ejected the contents of the stomach; the abdomen became tympanitic; and, on the third day, it died. I had taken pains myself to introduce the nozzle of the syringe, as imperforation of the anus was suspected, but there was no *atresia ani*, or obstruction to the contents of an ordinary half pint syringe, all of which was readily thrown up into the bowels, and retained for a time. The umbilicus was again inspected, lest hernia might exist in this region, but nothing was discovered which could account for the little patient's illness.

I was permitted to open the abdomen: A healthy liver occupied its usual share of space within this cavity, and when raised, the intestines much distended, but healthy in appearance, terminated in a normal rectum.

The stomach had at once attracted my attention, for it presented the appearance of that organ in a ruminant.

It seemed constricted into two sacculated enlargements, of unequal size: the superior or cardiac pouch was much larger than the pyloric, which ended in an impervious cord of ligamentous structure, not terminating in a caecal appendage, but in continuity with the rest of the intestines. Throwing a ligature around the intestine just below the termination of this fibrous cord, the entire abnormal portion of the digestive apparatus was removed as high as the œsophagus.

The first impression was, that I had encountered a bilocular stomach, as cases of so-called double and triple stomachs are not infrequent, being mentioned by most anatomical writers; but such was not the case, for on filling the preparation with water, through the œsophagus, the distension enabled me to recognize the true nature and relations of each of the pouches. The superior enlargement proved to be the stomach in its normal condition, the lesser dilatation was the duodenum, terminating in an obliterated cord in connection with the rest of the alimentary canal. The stomach possessed its normal position, size, and shape, at this period of birth; but the duodenum was distended into a spherical sac, which appeared to represent only its first or hepatic division, the cord into which it degenerated, formed the only vestige of the inflected portion of

this part of the intestine, but there was no visible connection through this fibrous band with either liver or pancreas.

This malconformation consisted then in a simple enlargement of the first portion, or hepatic division, of the duodenum; the *atresia* of the remaining part was expressed, not in a blind duct or process, permeable to the pressure of the column of water which filled the specimen, but in an obliterated fibrous cord.

When we reflect upon the morphological changes of the inner mucous layer of the blastoderma, by which the entire digestive apparatus is formed, and the perfectly normal development in this child, of all the parts dependent thereon, it must be apparent that the anomaly in question was the result of subsequent disease, which obliterated this portion of the duodenum.

The complete formation of the stomach; the large and perfect liver—itsself a diverticulum from the duodenal portion of the track—show that, at one time at least, the duodenum must have been perfect in its relation to this gland, and the rest of the alimentary canal. It is from the superior, or *oral* end of the organic mucous layer of the blastoderma that the mouth, tongue, salivary glands, œsophagus, stomach and duodenum, liver and pancreas, lungs and trachea are developed. The stomach—tubular and vertical for a long period of embryonal life—only gradually assumes its ultimate shape and position; even at the ninth month, the pyloric valve is but imperfectly defined. In this case, the stomach had accomplished its entire development, and so had the liver and pancreas. That the duodenum was also originally perfect was perhaps shown by the presence of meconium in some of the forced discharges from the bowels. These were not analyzed—therefore I cannot say whether bile was present, but from all appearances, they doubtless contained such as had been secreted and transmitted to the small intestines prior to the metamorphic changes in the renal and pancreatic divisions of the duodenum. Had there been an arrest of development during the evolution of these organs, not only could the liver and pancreas never have been formed, but the stomach would have retained its primordial shape as *tubular*, and embryonal direction as *vertical*.

Some ulterior change, perhaps of an inflammatory character, most probably caused the consolidation, and final obliteration, of the intestine just at this point.

This case may be considered as one of those malformations—if the term be here applicable—produced by obscure changes in the plastic operations of the formative force, after elaboration of *structure*; in other words, a pathological change appertaining to *fœtal*, rather than embryonal life, and bearing no resemblance to defective development, or an arrest of the *visus formativus*.

I take this view of this particular case, from the presence of meconium in some quantity within the intestines.

Since registering these notes, I have met some anomalies resembling the above case, though they are few, and date back many years.

CASE II. *Anomalism of the infra-gastric portion of the digestive canal.*—At a meeting of the Royal Academy of Medicine, held on the 11th April, 1826, Mr. Baron exhibited the digestive canal of an infant that lived three days, vomiting continually; without alvine evacuations. The duodenum was much dilated, and terminated in a *cul-de-sac* entirely obliterated where it joined the small intestines. These latter formed an extremely narrow canal of the size of the urethra, ending in the cæcum, while the large intestines scarcely presented the caliber of the former.

Mr. Baron states that no meconium at all was found in the intestines.

CASE III. *Duodenum, terminating in pancreatic duct, unconnected with rest of the intestines.*—An eight-months child, apparently well formed, was seized six hours after birth, with vomitings of dark matter, resembling meconium. * * * Hæmatemesis lasted sixty-five hours. The child died. The stomach, immensely distended, occupied nearly the entire left side of the abdomen. The internal surface presented the appearance of *gangrene*. Through the pylorus the stomach communicated with a second pouch, which had no other outlet than the pancreatic duct, so that no connection whatever existed between the gastric cavity and the intestinal canal.—*Arch. Gén. de Méd.*, vol. xvii., 1828, p. 264.

CASE IV. *Malformation of duodenum.*—This malformation was noticed by Dr. Robt. Boyd, of the Marylebone Infirmary, in a still-born infant. The organ was somewhat of an oval shape, six inches long, and two inches in diameter at the lowest and widest part, at the termination of which the canal was completely closed by a transverse membrane. Two inches and a quarter above this a valve extended across, nearly half closing the gut; it proceeded from the concave side, the central attachment of the septum being opposite the mesentery. The stomach was natural. The remainder of the small intestines was very small, and the large intestines were not fully developed.

Dr. Boyd refers in his paper to similar cases reported by Pied, Billard, and Schæfer.—*Med.-Chir. Rev.*, vol. xxiii., 1847, p. 412.

The general condition of the intestinal canal in these curious cases shows that no ordinary degree of morbid action may exist during fœtal life. Disease was probably the cause of the appearance of the stomach in Case III. Such also may have been the origin of the abnormal appearances in Case I. The interesting particulars of Case IV. would seem to me to point to something like an excess of development; for in the first place, the duodenum measured six inches in length, and two in diameter; and again, we find that the mucous membrane, notwithstanding this inordinate distension, was hypertrophied into valvular folds, which nearly closed the gut transversely. But it would seem from the general aspect, and singularly reduced caliber of the entire alimentary canal in Case II., that the omphalo-mesenteric development must have been perverted at some early period, since the entire intestinal tube was reduced in caliber to the size of an urethra. This *stenosis* of the digestive canal might have been the result, however, of that inflammation, which is recognized by pathologists as most common in the alimentary mucous membrane of the fœtus, frequently resulting in anomalies of structure, which have been erroneously regarded as arrests of development.

Inflammation, more frequently than is known, seizes upon structures in

the fœtus, previously well developed, producing consolidation, obliteration, and even deliquescence, destroying every trace of their existence. The *ulcerative* termination of the disease is not, however, often encountered in fœtal life. Even when perforations have been met, they affect a different appearance from such as are consequent upon ulcerative inflammation. I have met with a case, perhaps, in point, which was published thirty-nine years ago.

CASE V. *Malformation of the œsophagus and stomach.*—In July, 1828, a woman gave birth to a healthy-looking child, which could not swallow, though it took the mother's breast. On the fourth day the child died. The œsophagus terminated in a *cul-de-sac*, near the bifurcation of the trachea. A cellulo-fibrous band sprung from the anterior wall of the *cul-de-sac*, and ended in a portion of œsophagus, an inch in length, attached to the stomach. The stomach presented a porous structure, its mucous and muscular layers formed a network inclosed in the peritoneal coat, itself perforated at sundry points. The great *cul-de-sac* of the stomach was wanting. It presented a large circular opening at this part, as if it had been destroyed by ulceration, though the border of this opening was smooth, regular, and solid, in no particular resembling breeches of continuity, or perforations, produced by ulceration of the stomach. The interior of the organ was filled with a yellowish-red mucus.—*Arch. Gén. de Méd.*, vol. xxi., 1829, p. 116.

The above case is not without interest in its application to physiological history. The agency of the stomach and œsophagus, in the act of vomiting, and the relative facility of this act in infants, compared with adults, are questions still under discussion, which may receive elucidation from the study of vicious formations of the organs concerned in this act. Vomiting occurred whenever this infant nursed. It was kept alive by injections of milk *per anum*. These vomitings recurred every minute or two. The œsophagus emptied itself entirely, under circumstances, I presume, which cannot be ascribed to simple repletion producing pressure upon, and immediate stimulus of the muscular fibre; but rather by a complete circle of excito-motory reflex actions, evoked by the fluid milk. The œsophagus was thrown regularly into a reversed peristaltic action, vigorous enough to expel its entire contents, without the concurrence of any aid derived from diaphragm or abdominal muscles.

CASE VI. *Imperforated urethra.*—In October, 1866, my friend Dr. W. M. Fitch, of this city, requested me to see the infant of Mrs. L., in consultation, as there appeared to be some malformation about the urethra, which had prevented micturition. On examining the child we found the abdomen much distended, and so intensely painful that the slightest pressure gave agony. There was fever, and a plaintive cry bespoke approaching dissolution. Inspecting the genitalia, the organs were perfectly formed, and in their natural relation, but we could find no indication of an urethral opening. The bladder was immensely distended; and it occurred to me that pressure upon it might possibly force some urine through the vagina or umbilicus, should there exist a persistent allantoidal connection with the abdominal wall, or an abnormal penetration of the urethra into the vagina. The umbilicus, however, was perfectly healed, and there was no evidence, thus obtained, of the existence of a vesico, or urethro-vaginal

opening; yet according to the statement of the parents and nurse, the infant had "*passed no water*" at any time since its birth. It was about seven days old. The bladder was perfect, since it was much distended, as we have said; and I came to the same conclusion as my colleague, that the case was one of congenital deficiency of the urethra. We inferred that the indication at once to be fulfilled, was to relieve the suffering of the infant by puncturing the bladder, and the place of election was that at which the urethra should have opened in the normal condition. Provided with a delicate canula and trocar, with great care and precision, one plunge with the instrument penetrated the bladder, as near as anatomy could possibly guide me, in the direction of the normal course of the urethra; when, much to the relief of the infant, a considerable flow of urine took place, upon the withdrawal of the trocar. The silver canula was left *in situ*, and forced so far as practicable into the bladder. Adjusted in this situation, the patient was placed upon her back, an anodyne administered, and the attendants instructed not to interfere with the instrument, unless it should seem to be expelled, when we requested the nurse to push it back quietly. At the next visit, they informed us that urine had again been voided, but that the canula had nearly passed out. We found this to be the case, and we were obliged to introduce the trocar to clear the canula, during which effort we again forced the instrument back into the bladder. During the night the contractions of the bladder and motions of the infant entirely dislodged the apparatus, and as I had but little hope of effecting a permanent cure, no further attempt at an operation was made. The little patient appeared throughout this day greatly relieved, it took the breast, and we were soon encouraged on learning that there had been a natural voidance of urine, with its alvine dejections.

From this moment the case rapidly advanced towards a cure, and, what may seem interesting and instructive, not only was the artificial passage maintained as an urethra, but the child possesses contractile power over the elimination or ejaclation of urine, so nearly, it appears, did we strike the proper course of this vector duct of the bladder.

This case of congenital malformation was one of *deficiency*. The *pudenda* are developed from the serous layer of the blastoderma; the bladder, urethra, uterus, etc. from the internal mucous layer; these several structures march in development towards each other, *pari passu*, until they blend into one. An arrest of development explains imperforation of the urethra, as it does the much more common instance of the rectum, which, though formed in part, terminates in a blind duct, before it has reached the surface. The very developing force engaged in defining and isolating those organs which once formed the *urino-genital sinus* may have been carried so far as to cut off, by obliteration, the normal connection of the urethra with the future vulva. Had simple arrest of development occurred at an early period of embryonal evolution, the bladder would have retained its allantoidal connection with embryonal life, and through the urachus might have opened at the umbilicus; though when the urine is discharged through an urachus, which has remained patent, the urethra is generally present. But in this instance we only record a singularly rare *deficiency* of development, for no monstrosity, in the usual acceptation of

the term, existed; and we need not dwell upon the many abnormal conditions which the uropoietic system might present at an early period. The relief and subsequent cure give this case some importance in a surgical point of view; and the interest is also increased by the fact that urethral deficiency is usually accompanied with absence of bladder and a persistive cloaca.

This is a somewhat rare condition of the urethra, except among fœtuses, or still-born infants.

In an essay by Ollivier d'Angers, on the subject of "monstrosities by inclusion," full of interest to the surgeon and pathologist, there is a note at page 371 in which reference is made to an imperforated urethra in a still-born child. He says that he remembers to have seen, with his friend Mr. Billard, at the hospital *Des Enfants Trouvés*, a fœtus at term, with an imperforated urethra, whose bladder and ureters were enormously distended with a limpid and yellowish fluid, very similar to urine. No further particulars of the case are furnished.

And again, W. Vrolick, the distinguished professor of Amsterdam, states, that he has found *atresia* urethra in the fœtus "complicated with an unusual expansion of the urinary bladder and of the ureters."

In interpreting congenital deformities, it is not proper that we should abandon scientific ground to indulge in conjectures respecting the agency of the maternal imagination upon the product of conception, though instances occur in which it might appear difficult to relinquish so popular a speculation. A case in point was called to my notice, some years since, by a professional friend.

CASE VII. *Development of a sixth finger, under very peculiar circumstances.*—A black woman, mother of several negro children, none of whom were deformed in any particular, had illicit intercourse with a white man, by whom she became pregnant. During gestation she manifested great uneasiness of mind, lest the birth of a mulatto offspring should disclose her conduct; and so great was her solicitude on this score that it is reasonable, even legitimate, to infer that her imagination must have been often ingeniously taxed to invent some possible resemblance which the mulatto offspring might perchance present to her negro husband. It so happened that this negro man possessed a sixth finger on each hand, but there was no peculiarity of any kind in the white man, yet when the mulatto child was born it actually presented the deformity of a supernumerary finger. This child was shown to me, and as my colleague informed me of the particulars above described, I was called upon to explain so strange a circumstance, by any other hypothesis than the one generally accredited by the uninformed.

Whether the maternal organism exert any influence upon the development of the germ, has given rise to much debate in science. There are those who believe that some obscure influences have been operative in cases too numerous to allow of their being regarded as simple coincidences. As few, or as numerous, as such individual examples may be, they are suffi-

ciently impressive to make them the subject of consideration; but the review of the scientific doctrines which they evoke serves only to satisfy us of their true nature as simple coincidences, however extraordinary they may seem. If the physiologist is to be guided by the ascertained principles of *ovology* and *embryology*, he is forced to reject any explanation which rests not upon the experimentally acquired doctrines of science.

However wonderful such cases may be, until their relation to determined laws of development be ever-so-dimly recognized, they must be viewed as simple facts, and not as *prerogative* instances in science. This is the only logic which directs scientific research.

Perturbing moral, as well as physical causes, are often so immediately operative on the uterus, and through it, on the general phenomenon of gestation, as altogether to arrest it, and produce abortion; but it is an error to suppose every gradation possible, in this perturbing parent-power, from that which may entirely destroy the vital acts of germination, to that which simply deflects them at *one* point only. That no such nerve-power, in the maternal organism, should exert a constantly disturbing action over the formative force, nature seems to have providently circumscribed all the transitional stages of the ovum, and histological workings of embryonal life to an implanental period, in order that they should be entirely accomplished prior to any ovo-uterine connection with the parent organism. But even when this vascular connection is established, if we follow the progressive steps by which it was effected: through an allantois, from the diverticular stage; expanding to convey its arteries and veins into convoluted vascular tufts; engrafting these at a provisional point of implantation to form a placenta; to the subsequent reduction of this allantoidal pedicle, into an obliterated urachus; with the superaddition of the gelatine of Wharton—we shall discover no nervous structure, at any period of transitional or permanent development, which could in anywise affiliate the sympathies of the maternal system, to the independent and isolated embryonal acts of development, even had these not been antecedently fulfilled.

Hereditary peculiarities of form, feature, and disease are primordially inherent to the ovaric germ, or are transmitted and impressed at the instant of fecundation; but all other peculiarities, whether consisting in excess, deficiency, or perversion of the developmental force, depend upon the mystic handiwork of cell-genesis, the perfunctory performance of which can in nowise be ascribed to the maternal organism.

When the pathologist encounters an individual whose nervous apparatus is so functionally disturbed, that it calls almost every vital function of the system into simultaneous disturbance, should impregnation occur, he might consider the conditions of an experimental investigation perfect, for inquiry into the influence of such a constitution upon the development of the germ. Through the forebodings of such a diseased imagination, he might naturally

look for abnormalisms, such as club-foot, cleft palate, or hare-lip, yet he will seldom or never find more than an hereditary transmission of the nervous disease, or some modification of the same—development itself being perfect. In my private practice, through some years, no example more clearly illustrates the proposition than the case which I now, in conclusion, subjoin, viz :—

CASE VIII. *Congenital cecity*.—Mrs. —, the daughter of one whose talents and eloquence admirably fitted him for the high position of responsibility which he occupied, was a subject of chorea from her infancy. After marriage this lady suffered from attacks of this disease, which increased in violence to such an extent that at each pregnancy abortion occurred. In six or seven miscarriages at periods gradually more and more advanced, the still-born children almost always appeared by the breech, but were perfectly formed. The uterus becoming gradually accustomed to these frequent distensions, at last retained the product of another conception throughout the nine months of gestation, when a perfectly developed and very handsome girl was born.

It will readily be understood how great was the delight of the parents at the birth of a child, not only well proportioned, but whose features were unexceptionably perfect until it was discovered that the child was entirely blind. Congenital amaurosis existed in both eyes.

Here the superexcitation of the nervous system in the mother produced no effect whatsoever upon the development of the child, whose eyes were well formed; but the nervous disease with which the parent suffered, presented itself in the offspring under the modified form of *retinal insensibility*. The many abortions and miscarriages attest that so often as pregnancy occurred, as often was development accomplished in the production of perfectly-formed offsprings.

The choreic disease only rendered the mother's uterus particularly susceptible to the excitation of distension, which it underwent, at each pregnancy; and expulsion of the fœtus continued to recur, until this organ became accustomed to those organic changes in its structure incident upon conception; when it was finally able to retain the child, and sustain it throughout the entire period of gestation. Such aberrations in development as we have been describing, and congenital anomalies of every kind, are quite as common, and perhaps of more frequent occurrence, among animals where they remain obedient to the same laws of development. This circumstance, alone, should disabuse the mind of those popular prejudices which ascribe all such deformities either to maternal influence or to the mysterious decrees—as the ancients, and some of the moderns believe—of divine wrath.

ART. IX.—*Pocketing the Pedicle: a New and Successful Method of Treating the Ovarian Stump after Excision.* By Prof. HORATIO R. STORER, M. D., of Boston, Vice-President Am. Med. Assoc., etc. etc. (Read by title and abstract before the American Academy of Arts and Sciences, Nov. 13, 1867.)

THE operation of ovariectomy is now becoming so very common that in its discussion surgeons have shifted from the question of justifiability, which may be considered settled, to that of methods of performance, their reasonableness and their comparative safety. The following case may, perhaps, be considered as materially contributing towards the final decision. It will be found interesting to physiologists as well as to surgeons:—

The wife of the Rev. Dr. Mack, of Columbia, Tennessee, consulted me, on the 27th of July last, with reference to an operation for the removal of an ovarian tumour of some two years' standing. She had previously corresponded with other ovariectomists of older reputation than myself, but had been influenced in her final choice by the advice of Dr. Morgan, of Cincinnati. Being engaged in lecturing at Pittsfield at the time, I advised the lady to wait till cooler weather, and, at the same time, to avail herself of the opportunity for preparatory treatment. She accordingly spent the months of July and August with friends in Shirley, and reported herself to me, in Boston, during the month of September. The operation was performed in Chelsea, on September 23. There were present, Mr. T. Spencer Wells, of London, Drs. Kimball, of Lowell, Lincoln, of Boston, and Wheeler, of Chelsea; to the latter of whom, as having the charge of the after-treatment, belongs the larger part of the credit of the success that was attained. I consider myself especially fortunate in having had the very valuable assistance of Mr. Wells, whom I hoped to persuade to operate himself; but with true generosity, the master declined that he might volunteer to assist the pupil. Thus inspired, I could but endeavour to win an additional laurel for American surgery, by putting into practice an idea that I believe novel, but to which I have been brought by a long and patient process of inductive reasoning. I shall present the case from the notes of Drs. Lincoln and Wheeler.

"Patient aged 41. Tumour first noticed some two years since in the left iliac region. It has increased steadily till the abdomen is now equally prominent. Tension moderate, but enlargement sufficient to attract attention when the patient is dressed in street costume. Fluctuation distinct in every part of the abdomen—a single wave. Abdominal contour not altered by change of position. Vaginal wall but slightly protuberant. No œdema of the extremities or evidence of thoracic, hepatic, or renal disease. No previous strain or other injury. Menses have been regular, and are now present, having commenced yesterday.

"*Diagnosis.*—A unilocular cyst of the left ovary.

"At 11 A. M., etherization having been effected, a perpendicular incision of between three and four inches in length was made about half an inch to the right of the median line, starting nearly opposite the navel. The integument, superficial fascia, and a thin layer of fat, were successively divided upon a director, and on opening the peritoneum the ovarian sac was seen

translucent and movable. It was punctured by a trocar with tubing attachment, and a considerable amount of fluid having been allowed to escape it was grasped and drawn out without the slightest difficulty. The cyst was unilocular, filled with a straw-coloured fluid, translucent and albuminous, not ropy or thick. Its walls were moderately thick, and with its contents it weighed forty-three pounds.

"Dr. Storer's clamp shield having been applied, and very gentle compression exerted upon the pedicle (which was of the size of the thumb), it was divided with scissors by a clean rectangular incision, and without hemorrhage. On relaxing the clamp one artery of moderate size alone required attention, and this was secured by a ligature of iron wire. Mr. Wells having passed his hand into the abdominal cavity and found the right ovary in a healthy condition, the walls of the primary incision were united by twenty sutures of iron wire; *the extremity of the pedicle being brought between the inner lips of the wound, at its lower angle, and there 'pocketed';* this being effected by passing three of the stitches through itself and both inner edges of the abdominal wound, and then bringing the external edges closely together; the raw surface of the pedicle being in apposition to the raw surfaces of the wound, and yet covered over fairly and completely by the line of superficial union. A bandage was then applied to compress moderately the epigastrium, and the pads of a well fitting abdominal supporter were adjusted to the iliac regions to supplement the pressure that had been removed. The above proceedings occupied forty-five minutes. The patient readily recovered from the ether, and though slightly nauseated did not vomit. For an hour or two there was considerable aching in the hypochondria. Pulse at 1 P.M. 84; at 2 o'clock the same, firm. At this time cramps in the lower limbs, which were speedily relieved by a suppository of one-third of a grain of morphia; complains of a slight chilliness for a couple of hours, for which hot water was applied to the feet. At seven and at nine P.M. pulse at 84, less firm than soft, and surface of the skin very comfortably warm. Catheter was passed about four o'clock P.M., drawing off several ounces with considerable relief; at nine P.M. only a small amount. Mental condition now excellent, no bodily suffering. Patient kept on back and allowed to swallow only a little iced water and gruel.

"Sept. 24. Passed the night very free from pain or uneasiness, yet sleeping but lightly for an hour or two, as she had done for two or three nights preceding the operation, though free from anxiety. At 6 A.M. a moderate amount of water drawn. Pulse 72, full, not hard; surface very comfortably warm. Menses still healthily present." (Dr. Lincoln.)

"Throughout the day patient restless, the countenance somewhat sunken, and expression of anxiety; complains of nausea, with dryness of the mouth, and thirst. Surface of the skin moist, with slight increase of heat; feet cool; pulse 70, and soft, continuing about the same as early in the day. At 3 P.M., pain in the bowels, and a copious bilious discharge with traces of blood, accompanied with tenesmus and exhaustion of strength. A little brandy and water with small pieces of ice at intervals. A suppository containing a third of a grain of morphia was immediately passed up, but soon came back, with another discharge. From this time an enema of from forty to sixty drops of tincture of opium, in a tablespoonful of cold thin starch, was given after each movement. From 3 P.M. till 2 the following morning there were six evacuations, but patient obtained some rest at

intervals. She now acknowledges having eaten a pear or two, and swallowed the rinds, just previous to the operation.

"25th. Woke at 6 A. M. General expression of features better. Patient somewhat refreshed by her three hours' sleep. Has had no discharge from the bowels since 2 A. M. The stomach has remained quiet. The catheter was used about every four hours to prevent any uneasiness from the bladder. The wound remains dry and free from irritation. The pulse 80, with a little more warmth and dryness of the skin. The diet changed to boiled milk with lime-water, and beef-tea. The stomach and bowels remained quiet through the day.

"27th. Has slept better and been more comfortable every way; less thirst; tongue looks better; pulse 72. Some fulness of the upper part of the abdomen, with resonance, but bears pressure well. The bowels less irritable; had only two bilious discharges within the last forty-eight hours. Continues the starch and laudanum injections after each movement; also takes more nourishment.

"29th. General appearance much better. Says she feels stronger and more natural, but has not slept quite as well the last two nights. Complains of thirst and a bad feeling in the abdomen, as if distended with gas. The wound begins to-day to discharge a small quantity of pus, the edges, however, of incision looking well. Pulse 70, and quiet; the bladder voids itself, and the urine increases in quantity. Diet: toast, beef-tea, and milk.

"Oct. 2. Has slept better for the last few nights. Less nervous excitement; tongue clean; better appetite; less thirst; is cheerful, and desires to see a few friends. The abdomen continues about the same; a little more flat. The wound looks well, and discharges moderately. The day before yesterday (Sept. 30) eight or ten of the sutures from the upper part of the incision were removed. The bowels remain quiet. Beefsteak and mutton-chop added to the diet.

"5th. Has slept better for last three nights; no excitement; skin more natural. The abdomen slightly tumid, but soft and without pain. Complains of a little irritation since the wires were removed. The stomach and bowels remain quiet; the strength improves.

"8th. For the last three days the patient has gradually improved; sleeps well, and looks brighter; appetite moderate. Complains less of the abdomen; sees a few friends, sits up in bed and reads. The wound doing well. Boiled egg added to the previous diet.

"11th. For the last three days has not appeared as well; more restless at night. Appetite not as good; complains of the stomach; some fulness of the bowels, with pain. On the 10th had a small cup of custard, which may have caused some indigestion, as it was followed the next day by vomiting, accompanied by from twelve to fifteen copious dejections, bilious in character, without blood, but with severe dysenteric pains in the rectum. The frequent evacuations soon prostrated her strength; the skin became moist and cool; pulse feeble; the expression of the face anxious. Stimulants of brandy, wine-whey, and beef-tea were freely given. Tannic acid and the acetate of lead were added to the starch and opium injections, but the discharges were so rapid they could do but little good. Then a grain of oxide of silver in pill and twenty drops of tincture of opium were given every three hours by the mouth. This seemed to check the bowels, but the tenesmus was still troublesome. To quiet it, a solution of nitrate of silver (two grains to the ounce of water) was thrown up by enema, with the effect desired. The stomach continued to bear stimulants and food.

"15th. For the last four days she has been gradually improving in strength; the stomach and bowels have behaved better; no discharge. Continues the silver pills, with twenty drops of laudanum, three times a day. Sleeps well; appetite good; takes beef and mutton. The wound looks well and is healing kindly.

"16th. Is doing well in every respect. Continues the same generous diet. Wound discharges but slightly. Removed five or six more sutures. From this time continued to gain strength, and health improved; began to sit up and move about the room, the wound nearly healed. On the 19th inst., two of the wires passing through the pedicle having been removed, the remaining one was cut off very low down, and left to be permanently covered by the integument.

"Upon the 22d the patient was discharged and allowed to drive to visit friends in Salem, a distance of some twelve miles." (Dr. Wheeler.)

It will be seen that in two important respects I deviated from the usual methods in practice.

In the first place, I operated during menstruation. We have, all of us, been inclined to imagine that the approach or the presence of the catamenia formed an insuperable bar to the performance of any serious pelvic operation, alike from the increased nervous tendencies of that period, and from a supposed greater liability to primary or secondary hemorrhage. Mr. Wells informs me that of his long series of ovarian sections, now rapidly approaching the second half of the third hundred, none have been at the menstrual period, and the same caution seems to have been observed by other surgeons. By the usual methods of practice, to operate at the menstrual period is perhaps dangerous. It may be, however, that we have all been mistaken with respect to the absolute risk, and that with the impossibility of secondary hemorrhage occurring, and the ease of primarily closing the vessels, that I have now provided for the cases where the pedicle is sufficiently long to be "pocketed," the presence of the sanguineous discharge from the uterus may prove truly critical and of advantage in lessening the chance of subsequent metritic or peritoneal inflammation. At any rate, the successful issue of the case now reported proves that the period referred to is not necessarily attended with danger; moreover the shock of the operation, and the removal of one ovary during menstruation, produced no sensible effect in lessening or increasing the amount of the catamenial discharge. This is a question I have long been anxious to study upon the living subject, and especially in a case where, as here, only a single Graafian vesicle had become cystic and the remainder of the affected ovary remained perfectly healthy; a point of great interest to physiologists. It will be noted, also, that up to the time of operation, the menses had remained normal, instead of having lessened in amount as is very often the case in ovarian disease. I am satisfied that physiologists have yet to materially modify certain of the views generally accepted, as to the essential characters of menstruation. To one important point I called attention some two years ago when reporting the case of Miss Colcord, of Malden, from whom

I removed the uterus and both ovaries; eighteen days after the operation, and twenty-six after the last catamenia, there occurred from the vagina "a sanguineous effusion, attended by feelings of lassitude, backache, etc. etc., lasting thirty hours, and being an evident attempt at the re-establishment of menstruation."¹ I am not aware that a similar case to this has ever been reported. It is now two years and two months since the operation, and the lady continues in perfect health.

Still again, I removed both ovaries, a year since, from a patient in Brookline, Mrs. Mathews, having the assistance of Drs. Faulkner of Jamaica Plain, Francis and Salisbury of Brookline, and Mitchell, of Jacksonville, Florida. In this case I deviated from the usual method of dealing with the pedicle, in that I did not divide it, as is usually done, but carefully dissected away the Fallopian tubes, throughout their whole length, from the surrounding masses, preserving them intact, and then closed the peritoneal wounds along their entire course by metallic wires, which acted both as ligatures and sutures: inserting upon one of the tubes some five of them, and upon the other three. The lady recovered without a bad symptom. The ovaries were entirely removed, and yet the patient has had, during the supervening period, quite regularly, a sanguineous discharge, without evidence of uterine disease, and which hæmostatics, generally and locally applied, have failed to check or prevent. This occurrence, in its persistence and regularity, seems materially to differ from the hemorrhagic discharge sometimes seen very shortly after an ovarian section. I commend these points to the attention of physiologists.

In the second place, reasoning purely from effect to cause, I ventured to treat the ovarian stump in a manner that is, so far as I am aware, a novel one. To the present time, operators seem to have adopted four different methods of dividing the ovarian attachments, and some nine different methods of treating the stump, with the end of controlling hemorrhage, preventing suppurative drain or absorption, and of escaping peritonitis.

I. DIVISION OF THE OVARIAN ATTACHMENTS.

1. By the knife.
2. By the *ecraseur*.
3. By the actual or galvanic cautery.
4. By dissecting away only the diseased portions where the parts are much involved, and leaving the Fallopian tubes entire. (My own.)

II. SUBSEQUENT TREATMENT OF THE STUMP.

A. *Stump internal*.

1. Ligatures, whether of the whole stump, or of its two halves, or of the vessels separately; the extremities being brought through the external wound or through the vaginal roof.
2. Ligatures cut off, whether organic or metallic, and the wound closed.

¹ American Journal of the Medical Sciences, January, 1866.

3. No ligature. Attempt being made to prevent hemorrhage by the actual or galvanic cauter, or some powerful styptic, as persulphate or perchloride of iron, with or without compression or crushing of the tissues with the clamp.

4. A combination of the above methods.

5. Acupressure, the needle passing through the wound.

6. Acupressure, the wound being closed and the needle passing through two other points of the abdominal wall. (Simpson.)

B. *Stump external to the abdominal integument.*

7. Being retained by some form of clamp, as that of Mr. Wells.

8. By transverse pins, or

9. By the sutures of the wound ;¹ in either of these cases attempt being made, or not made, to control hemorrhage by the actual cautery or some styptic, or to prevent suppurative action by inducing mummification. Under all these methods patients have recovered, but to all of them there are certain grave objections, and the question is: Can even a larger percentage of patients be saved than has, as yet, been done? Our science has a right to demand that its votaries elect only such modes of practice as are based upon the soundest application of general principles. Applying this rule to the operation in question, the ovariologist seeks to prevent hemorrhage, primary and secondary; to avoid suppuration, fatal by producing exhaustion or septæmia; and to escape peritonitis.

Now how is it in reference to these points with each of the methods ordinarily adopted?

Let us consider.

I. THE DIVISION OF THE OVARIAN ATTACHMENTS.

1. *By the knife.*—An incised wound bleeds more freely than a contused one. Ligatures are always apt to slip, and give free exit to a fatal flow;

¹ In looking up the history of division of the pedicle, I find that Scanzoni refers to "a procedure of Langenbeck, according to Wagner," about which there may possibly be some doubt, and therefore, in justice, I refer to it. "The portion of the pedicle which remains (after division) is retained in the womb (*sic, an venter abdominalis?*) in such a manner that the part of the peritoneum which invests the latter (?) shall remain in contact with that of the abdominal wall. (?) The wound is then carefully closed by means of an interrupted suture, which does not implicate the peritoneum, but some threads of which pass into the pedicle." (*Diseases of the Sexual Organs of Women*, Gardner's edition, p. 473.) Scanzoni's description is a very blind one. He gives among his references none to Wagner's article, nor to any paper by Langenbeck, and it has not been alluded to by English or French writers upon the subject. Diligent search among the German journals has failed to clear up the point, and, as my friend Dr. Francis C. Ropes, of this city, one of Langenbeck's pupils, is ignorant of his having differed from other operators in his treatment of the pedicle, I am forced to believe that the method referred to is merely the old one of stitching the extremity of the pedicle into the lips of the external wound.—H. R. S.

besides "there is often much loose cellular tissue, rich in small veins, which go on oozing, after all the larger vessels have been tied;"¹ therefore it is, that, *a priori*, preference should be given to the écraseur, and to the actual cautery; to which, however, it will be shown there are equal objections.

2. *By the écraseur*.—I have myself, in several instances, resorted to this instrument and with a fair measure of success. In one of my papers upon ablation of the uterus, I have, however, pointed out several grave dangers attending its use; one is, the almost inevitable dragging in of ontlying tissues (if my clamp-shield is not used), and so greatly increasing the number of vessels divided. Besides this, from a contused wound there is a greater liability to subsequent suppuration. "I never saw," says Mr. Wells, "more profuse suppuration than in one case where I divided the pedicle with the écraseur."² And again: "The écraseur I used once and successfully; but I have not ventured on it again, for if it should prove untrustworthy, and internal bleeding occur in any case, one's self-reproach would be very painful."³

The same is true of

3. *Division by the cautery*.—"The cautery alone," remarks the surgeon from whom I have quoted, "would almost certainly fail to stop such large vessels as are frequently met with in a pedicle."⁴ Despite the attempt to dazzle the profession made by Mr. Baker Brown, whose proven unreliability in another matter is sufficient to destroy his authority in this, there exists a growing distrust of a method whose dangers are, theoretically, so evident. It may be asserted that very different changes take place within the abdominal cavity after operations, than in regions of the body more completely exposed to the action of the atmosphere. This is undoubtedly true to a certain extent, but not so far as to warrant our adopting an entirely new system of abdominal physiology and pathology, as would else be required.

4. *My own method of partial division, as practised in the Mathews case*.—It has these advantages, that no vessels are unnecessarily divided, and that by the closure of the cut peritoneal edges along the Fallopian tubes, their primary union is rendered probable, hemorrhage prevented, and the general peritoneal surface preserved from contact with any newly divided or suppurative tissue. By this method the use of the écraseur and the actual cautery are rendered unnecessary. It is applicable, with but slight modification, to nearly all difficult cases conceivable; and may then, perhaps, be termed "Capping the stump." For just as Marion Sims found, in amputation of the cervix uteri, he could insure a quicker convalescence, devoid of many of the usual dangers, by simply bringing together from each side the mucous membrane, and forming a linear closure, well stitched

¹ Spencer Wells, Clinical Remarks on Different Modes of Dealing with the Pedicle in Ovariectomy. British Medical Journal, Oct. 1866, p. 378.

² Ibid.

³ Ibid.

⁴ Ibid.

to the deeper tissues, so can the serous lips of a peritoneal wound be approximated, and mechanically made to close the mouths of bleeding vessels. Where the pedicle is a long one, my second method will usually be found practicable, and the stump should therefore be "pocketed." When it is short, or there is practically none at all, the stump can still be "capped;" metallic sutures, as in other surgical operations, being preferable to silk, catgut, or flax.

Consider now in the same light—

II. THE SUBSEQUENT TREATMENT OF THE STUMP.

Whether the extremity of the stump be left entirely within or without the abdominal wound—whether it be *intra* or *extra*-mural, there must necessarily exist certain grave dangers which, by the *inter*-mural attachment, or pocketing, are avoided. This may be made evident alike as concerns the ligature, however applied, and whether removed or left permanently *in situ*, the canter, Mr. Dixon's wire compress, and acupressure; the latter so excellent in itself, and though comparatively safe, yet positively so hazardous when resorted to within the abdominal cavity. "If," as Mr. Wells said of the *écraseur*, and as might be said equally well of either the ligature or the cautery, for with both methods has the danger repeatedly been realized in a fatal result, "if it should prove untrustworthy, and internal bleeding occur in any case, one's self-reproach would be very painful." These several risks have been so fully pointed out in the paper upon "The Different Modes of Dealing with the Pedicle," from which I have quoted, that it is unnecessary for me here to do more than refer to them. Mr. Hutchinson made an immense advance in lessening the mortality of ovariectomy, when he brought the extremity of the pedicle outside of the abdominal cavity, and at once decreased the risk of hemorrhage, of peritonitis, and of a subsequent hæmatocele, from reflux of the catamenia through the divided Fallopian tubes; an accident which has frequently happened, and is liable to be attended by a fatal result. While, however, the external or extra-mural method, whether by clamp, or pins, or suture, is, where the pedicle is long enough, far superior to the wholly internal method, in any or all of its forms, Mr. Wells has had the good sense to perceive, and the frankness to avow, that it has yet not been perfect. I do not here refer to certain objections that have been made, that Mr. W. has justly characterized as either groundless or trivial. We must allow that the clamp does not necessarily cause pain or vomiting, and that in the case of a subsequent pregnancy it does not necessarily induce abortion. "But," says Mr. Wells, "it is said to set up fetid discharge, and poison the wound or the patient; and so it does, if proper care be not taken." "It is said to cause suppuration about the wound; but this again I have seen quite as frequently, in proportion, after the ligature or cautery." "After the wound is closed, it is said to lead to a reopening each month, and an escape of some menstrual fluid; and this is true in

some, perhaps nearly a third of the cases." "A real objection," he continues, "to the clamp is, that it may possibly pull on intestine, or a tense pedicle may strangulate intestine; and I have seen one such case. But this objection is of but little weight if the use of the clamp be restricted to cases where the pedicle is so long that there is not much drag on the clamp."

By "pocketing," all these risks are avoided.

1. The raw surface of the pedicle is attached directly to the raw surface of the abdominal wall, and the most favourable condition for primary union of these surfaces is secured.

2. Primary hemorrhage is as easily prevented as though the pedicle were external, and so is secondary hemorrhage also; for any desirable amount of compression can be obtained by the sutures; and if, for any reason, it were thought advisable, the external lips of the wound might be opened, and the stump inspected by untwisting the wires, without opening the inner lips of the wound and exposing the abdominal cavity.

3. There is no inevitable fetid discharge from the stump, as is otherwise the case, unless its tanning or mummification by perchloride of iron is effected.

4. If a careful adaptation of parts has been made, serous edge to serous edge, and only raw surface to raw surface, as can be easily obtained with a little care, there is slight risk of suppuration being excited in adjacent tissues. In the Mack case it was but superficial, and had the pocketing been done with the dexterity that a little practice at it will give, there would probably have been none at all.

5. The existence of an infra-umbilical uterine outlet for the catamenial flux, and the occurrence of an intra-peritoneal hæmatocele, are alike rendered impossible.

6. The possibility of traction on intestine, or of its strangulation, is far less likely than with the use of the clamp, inasmuch as we are able to save from one to two inches more of the pedicle, according to the thickness of the clamp that might else have been used, and of the abdominal wall through which the stump would have had to come.

It will be noticed that I placed a metallic ligature upon that portion of the stump inclosed in the pocket, and that I allowed the point of flexion of one of the supporting sutures to remain. In future, I shall probably not do this, but simply employ an acupressure needle by the "overtwist" method, just as I am accustomed to do when amputating the breast; the condition of things in the ovarian case being, by pocketing, rendered as simple and safe as in the other. It will be also noted that I employed scissiors rather than the knife or *écraseur* in dividing the pedicle. I wished to avoid the contusing effect of the latter instrument, and yet escape the free hemorrhage occurring from the use of the former; and I am accustomed to think, with my friend Dr. Emmet, of the State Woman's Hospi-

tal of New York, that the action of scissors resembles sufficiently that of the écraseur to produce a marked effect towards modifying the risk of hemorrhage. In pocketing, the knife may, however, be used without any of that fear that must necessarily exist with every form of the intra-peritoneal method. I divided the pedicle, moreover, by a rectangular sweep, that I might thereby nearly double the amount of severed surface, and obtain an increased length of attachment to the walls of the external wound.

In cases where there is a distinct pedicle, but yet not of sufficient length for pocketing, a modification of "capping" has been suggested to me by my assistant, Dr. Alex. J. Stone. It is that, by thus rectangularly notching the extremity as above, its edges may be brought directly together, and the whole be dropped back into the pelvic cavity, with the effect of obtaining a smooth and non-suppurating stump. I consider the proposal an excellent one. It may be thought that the artery would necessarily retract, but if the sutures were properly applied, and with care, this would be avoided.

Mr. Wells expressed some surprise that I made the attachment at so high a point, midway between the umbilicus and the pubis. It will be perceived, however, that provided the pedicle be long enough, the higher its attachment the better, in view of a subsequent pregnancy, the uterus being thus allowed to rise to a higher point than would otherwise be possible. He also remarked to me his astonishment that ovariectomy, being from the first pre-eminently an American operation, should have made nearly as slow progress in becoming accepted as legitimate in this country as elsewhere. Under the circumstances is it too much for me to hope, that the two new American methods, "capping" and "pocketing," may be generally adopted at home, and that the great authority of the day, who, by his late visit and practical teachings, has done more than any one of our own teachers could have accomplished towards convincing our profession of the legitimacy of ovariectomy, may become the first to test their value on the other side of the Atlantic? He has said in the papers from which I have quoted, that "where the clamp is possible, he wishes for no readier or more successful method." He had not then perceived, however, that in treating the ovarian stump, we are not necessarily confined to either the external or the internal method. Here, as in a great many other matters, *in medio tutissimus ibis*. In taking the half step backward from the external surface to the "pocket," I have but [honoured] the example of his usual practice in withdrawing the stump from the peritoneal cavity, hitherto the greatest improvement in ovariectomy.

I should have hesitated thus to present as important a single case, and to draw conclusions from it as I have done, had there not evidently existed intrinsic and valuable elements upon which to base them.

ART. X.—*Case of Ovariectomy in which the Pedicle was Tied with a Silver-Wire Ligature, Returned, and the Wire left to be Sacculated; Recovery.* By WM. G. BULLOCH, M. D., of Savannah, Ga., Professor of Surgery in the Savannah Medical College.

I HAVE delayed reporting the following case in order to afford time to test the permanency of recovery. As more than three months have now elapsed since the performance of the operation, and the patient is restored to health, and has resumed her ordinary duties, I think it may be fairly reported among the successful cases of ovariectomy.

June 3, 1867, I was called upon by Mr. E. B., of Screven County, Ga., who presented a letter from his family physician, Dr. W. C. Bowie, in which he stated that Mr. B. desired to procure my professional services for his wife, who was the subject of "encysted ovarian dropsy." "Mrs. B.," the doctor states in his letter, "is suffering greatly from mechanical pressure of the tumour, and although her health is not much impaired by it, yet the time has arrived, in my opinion, for surgical interference." Mr. B. urgently requested me to return with him the next morning to his home in Screven County, fifty-eight miles from Savannah, to which I acceded.

On visiting Mrs. B. she stated that she was losing flesh and strength; her appetite was failing; her bowels were irregular, and she was suffering from other unpleasant symptoms, in consequence of which she earnestly desired to have the tumour removed.

Mrs. B. is forty years of age, the mother of five children; had menstruated regularly, and always enjoyed good health until the spring of 1857, when there appeared a small tumour in the right iliac region, painful on pressure. She consulted Dr. Bowie, who diagnosed an ovarian tumour of the right side, and employed the usual remedies, such as iodine and its preparations, internally and externally, under which treatment she continued at intervals for several years. After consulting various physicians and trying a variety of treatment, she at last came to the decision to have the tumour extirpated at all hazards.

When standing erect Mrs. B. has the appearance of a woman at the full period of pregnancy, and measures, in the recumbent position, around the abdomen over the navel, $38\frac{1}{2}$ inches; an inch below the navel, where the tumour appears the largest, 40 inches; from the pubis over the tumour to its base at the pit of the stomach, an inch and a half below the ensiform cartilage, 19 inches. Horizontal circumference while recumbent, 38 inches. The abdomen fluctuates distinctly on percussion, is smooth, regularly protuberant, and moves but little, if at all, when the patient changes her position. Dulness on percussion over the whole abdomen.

From the facts above stated, we diagnosed it to be a case of unilocular ovarian tumour, but owing to its filling up the whole or nearly the entire abdominal cavity, and not moving except with the whole abdomen when the patient changed her position from side to side, and there having been but slight evidences of inflammatory action, we were undecided as to the existence of adhesions to the adjacent parts.

We decided to operate in compliance with the desire of Mrs. B., and ordered her at once a dose of castor oil as a preparatory step.

The patient's bowels and bladder having been evacuated, she was placed upon a suitable table, and at 2 o'clock P. M., June the 5th, I operated, assisted by Drs. W. C. Bowie and A. B. Lanier, and a female friend of Mrs. B. Dr. Lanier administered the chloroform, drop by drop, on a handkerchief covering the face, as I have found that the least wasteful plan and the most certain of producing anæsthesia.

An incision, at first three inches, subsequently extended to four inches in length, beginning an inch below the umbilicus, was made through the abdominal walls over the linea alba, and though I proceeded slowly and carefully, owing to the thinness of the muscles, and to an adhesion of the tumour to that part of the anterior wall, the knife penetrated the sac before I was aware that it had more than reached the cavity of the abdomen. The contents of the sac, an amber-coloured liquid, escaped freely, pouring into a vessel held to receive it, so that very little was lost, and was estimated to amount to if not exceed eight quarts. The sac was unilocular and studded all over its internal surface with innumerable granular bodies like hydatids, and weighed 23 ounces when removed.

The question now arose, whether the sac should be allowed to remain and be injected with some stimulating liquid, or excised? Finding it loose, in a great part of its extent, and but slightly adherent in others, after a short consultation it was determined to remove it. This proved to be not so easy a task, for it was very adherent to the umbilical region as elsewhere, and to parts within the pelvis, particularly to the left ovary, and to the round ligament of the right side. There were no adhesions to the stomach, intestines, or liver. After some difficulty in separating the adhesions and peeling it off as it were from the peritoneum, and getting at its pedicle, this last was firmly secured, as advised by Dr. J. Marion Sims, by a silver-wire ligature, replaced in its normal position, and the sac removed entire. The peritoneum presented generally a dark red appearance, which attracted the attention of us all. The abdomen was then sponged out with a soft sponge wrung out of warm water, and the lips of the external wound brought together and closed by silver-wire sutures. A flannel compress was next applied, and over this a six-tailed flannel binder. There being no tension, adhesive straps were not applied. The patient was then removed from the table, placed comfortably in bed, and a full dose of morphia administered, which was directed to be continued in smaller doses every four hours through the night.

June 6, 6 o'clock A. M. Has had a good night's rest, and is this morning without pain or soreness, has had the bladder emptied twice with the catheter since last evening. Pulse 132; no nausea or vomiting. Has taken gruel and milk-and-water tea through the night.

7th, 9 o'clock A. M. Has had a good night's rest; urine drawn off with the catheter whenever she desired to urinate. No movements of the bowels since the operation, except a disposition to pass off wind, which is of some annoyance to her. Pulse 116. Continue the opium; allowed arrowroot boiled in milk and water for nourishment, which she relishes, though she complains of a want of appetite. Wound looks well; some oozing of blood from the upper angle, over which a strip of adhesive plaster was now applied. Superior portion of the abdomen somewhat distended and resonant on percussion. No soreness, or uneasiness of any kind. Pulse 112.

It was agreed, in consultation with Dr. Bowie, on my departure this day, that the treatment by opiates, perfect rest in bed upon the back, and a suitable diet should be continued.

I extract the following from notes sent me by Dr. Bowie:—

8th, 12 o'clock M. Had a comfortable night. Pulse 112; skin cool and moist; countenance natural. Abdomen resonant on percussion; no swelling, and but little tenderness on pressure. Urine evacuated per catheter. R.—Directed opium to be continued in grain doses every six hours. Diet—Arrowroot and chicken-broth.

10th, 11½ o'clock A. M. Pulse 110. Complains of some uneasiness about the bowels, as if they are disposed to act. Some appetite. Urine normal. Treatment continued.

12th, 11 o'clock A. M. Passed a very comfortable night. Pulse 98; feels as if her bowels would act. All other symptoms as on yesterday. Ordered an enema of warm water, to be repeated if necessary. Opium continued. Diet as usual.

13th, 12 o'clock M. Pulse 90. No action upon the bowels. Ordered enema repeated, with the addition of castor oil. Opium continued.

14th, 10 o'clock A. M. Bowels moved twice during the night. Removed the sutures from the wound; union seems to be perfect. Morphia in ¼ grain doses every six hours. Diet as usual.

16th, 2 o'clock P. M. Pulse 90. The tongue, which had been coated with a white fur, is clean; appetite good, begging for something to eat; abdomen resonant on percussion, except over the hypogastric region, where it is dull; some fulness and hardness; no tenderness. Bowels moved once during the night; passed the urine naturally. Walked across the room this morning. Advised her to remain in bed a few days longer. Some improvement in her diet. Morphia, in ⅙ grain doses, continued.

22d. Has fever; skin hot and dry; pulse 120; urine high-coloured. Her husband reports fever came on during the night. Complains of considerable pain in the pelvic region; thinks "it may be the womb." Hypogastrium full, hard, and tender on pressure. Bowels moved twice during the night; a vaginal examination revealed no abnormal condition of the uterus. Directed a poultice to be applied over the swelling; morphia in ¼ grain doses every six hours; diet restricted to gruel and chicken-broth.

24th, 8 o'clock A. M. Pulse 104. Hypogastric swelling more prominent; in every other respect the same. Not so much thirst as during the past few days. Urine high-coloured; tongue coated with a white fur. Treatment continued.

28th. Pulse 102. The hypogastric tumour more prominent and definite; feels through the abdominal walls like a deep-seated tumour occupying the hypogastric, right and left iliac regions, painful and very tender on pressure; the surface over the tumour has a natural colour; detected fluctuation on percussion. Made an opening into the tumour, in the median line, about an inch below the lower angle of the former incision and a little above the symphysis pubis, which discharged about sixteen ounces of pus. A probe passed readily to the depth of four inches. Introduced a tent into the opening. Treatment continued as before.

30th. Abscess still discharging freely; pulse 90, and feeble. Appetite good; skin cool and moist; urine natural in colour. Bowels moved yesterday. Ordered brandy in addition to diet; morphia at night only.

July 2. Abscess still discharging. Pulse 88; improving in strength. Allowed some increase in her diet. Continued brandy; poultices, and morphia.

10th. Was sent for to see Mrs. B., in consequence of an eruption involving the surface to the extent of four or five inches around the opening

of the abscess. Pulse 76. Abscess discharging a little; tongue clean; walking about the house; feels well, except itching and smarting caused by eruption. Removed the tent; discontinued poultices. Brandy discontinued several days ago. Diet unrestricted. Ordered iodine to be applied to the eruption.

17th. Mrs. B. is engaged in attending to all her household and out-door duties of a farmer's wife. Eruption cured. Abscess discharging very little; no unnatural fulness nor tenderness over the hypogastrium.

24th. Actively attending to all her domestic duties. Has regained her strength and flesh. No discharge from the abscess; no fulness nor tenderness over that region, feels a little hard on pressure. Discharged cured.

August 4. Mrs. B. was taken with uterine hemorrhage July 28, which continued until to-day, when she was delivered of a three-months' foetus. The abortion was wholly the result, no doubt, of over-exertion, as contrary to orders she would attend to her accustomed duties.

11th. I heard from Mrs. B. to-day. She expresses herself as perfectly well, with the exception of a little feebleness since the miscarriage.

Remarks.—I have been induced to report this case from its intrinsic interest. It is remarkable from the extent of the adhesions, the recovery of the patient even after the formation of a large abscess, and the fact of the patient being pregnant at the time of the operation without the uterine contents being affected thereby, or by the inflammatory excitement of the forming of the abscess.

Could this abscess have arisen from the sloughing of the remains of the pedicle, or the presence of the silver-wire ligature? I took it for granted that the wire was sacculated by effused lymph, as Dr. Sims found in the case he examined, as nothing has been ascertained of its whereabouts since. I will state here, *en passant*, that the left ovary was examined at the time of the operation, and found to be healthy. The uterus I thought was larger than natural in the unimpregnated state, rising a little above the brim of the pelvis; but I did not suspect her to be pregnant at the time, as she informed me that she had regularly menstruated until up to the last period before the operation. The absence of menstruation and the enlargement of the uterus I attributed to the irritation produced by the diseased condition of the ovary. She must have been at least one month advanced in pregnancy, as Dr. Bowie states that she had an abortion of a three-months' foetus, on the 4th of August, only one day less than two months since the operation.

It will be observed that the subsequent treatment of the case was exceedingly simple, and that morphia, administered largely at first and subsequently in smaller doses and at longer intervals, was the only medicine employed. She was not allowed to rise from bed to sit on the chamber, the catheter being invariably depended on to evacuate the bladder. Her bowels were confined by the opiates, and were not moved until the eighth day after the operation, and then only by injection. The dressings to the external wound were not disturbed until eight days after the operation,

when the sutures were removed, and union of the lips of the incision were found to be perfect.

Mrs. B. is now in her usual health, attending to all her domestic duties, as well as travelling about visiting friends in the neighbourhood.

SAVANNAH, August 30, 1867.

ART. XI.—*Case of Inversion of the Uterus, Reduced after Eighteen Months' Duration; with a New Mode of Procedure to be adopted as a Last Resort, in any Case where the Reduction cannot be accomplished.*
By THOMAS ADDIS EMMET, M. D., Surgeon in Charge of the New York State Woman's Hospital. (With two woodcuts.)

Mrs. C., aged 26, on the recommendation of Dr. Crispell, of Rondout, N. Y., was admitted to my private Institution, May 21st, 1867, and presented the following history: She menstruated first at 12 years of age, married at 23, and had been in perfect health previous to the birth of her child. Labour at full term commenced December 22d, 1865, and was terminated by the efforts of nature, at the end of twenty hours, its progress having been somewhat tedious, but otherwise natural. By the next pain following the birth, the placenta was expelled, without traction or any interference. The cord was of a natural length and not looped about the body of the child. She was attended by a physician of experience, who furnished Dr. Crispell with the following interesting feature of the case. Before putting on the bandage he waited some time and satisfied himself that the uterus had contracted properly. As he was leaving the house he heard her bearing down as with an expulsive pain, but feeling satisfied that there could be nothing unusual in her condition, he proceeded home, but a few hundred yards distant. He, however, felt uneasy, and on his almost immediate return he found that he was just being sent for, as, with hemorrhage, the pain had been violent and continuous since his departure. An examination disclosed a complete inversion of the uterus, which was immediately reduced without difficulty, and with the recurrence of pain, the organ contracted naturally. He remained in the house for nearly three-quarters of an hour afterwards, and before leaving satisfied himself that the uterus had properly contracted. The after-pains were slight, she made a good recovery, nursed her child, and was apparently in perfect health until thirteen months afterwards. Menstruation then returned, and at the end of five days, when it had nearly ceased, excessive hemorrhage suddenly came on. The uterus was then found completely inverted and the fundus just within the labia. By astringent injections the hemorrhage, for the time was arrested. At the end of the fifth day of the next menstrual period, the hemorrhage again occurred, and with each period afterwards would continue, until arrested by astringents or the tampon. I found her exceedingly anæmic, and having at all times a profuse watery discharge, with a tendency to hemorrhage on the least exertion. A few days after admission, with a pulse of 120, she was placed under the influence of ether, and with the aid of Drs. Peaslee and John G. Perry, Dr. Crispell being

also present, I attempted the reduction. The condition of the uterus was remarkable, and might easily have been mistaken for a polypus. The vagina was found occupied by a soft, smooth mass, about the size of a hen's egg, with a distinct pedicle scarcely three-quarters of an inch in diameter, around which the cervix was well contracted. The uterine probe passed a little over two inches into the canal and apparently to the fundus. The left hand was introduced into the vagina and the other above the pubes; they were then approximated sufficiently behind the uterus to indicate that the case was one of inversion, while from the shape of the mass and the depression in its centre, felt through the abdominal wall, there remained no question as to the true condition. With the patient lying on the back, the fingers around the pedicle were gradually introduced into the uterine canal, and the cervix dilated by gently spreading the fingers, while the fundus, as shown by the second diagram, rested in the palm of the hand. In the course of half an hour the cervix and canal had become so dilated that the fundus could be carried entirely within the uterine cavity, but beyond this no progress could be made in the reduction. The pedunculated portion was so small that it would double on itself in such a manner that the upward force, of so much importance at this stage, could not be fully exerted, and was lost to a great extent. Over the edge of the ring formed by a portion which had been inverted and but just rolled out, the broad ligament on the right side, at this stage of the reduction, was felt thickened and dipping into the canal formed by the inversion below. On turning the uterus up against the abdominal wall, by means of the hand in the vagina, this condition was recognized by all present, and as the mass could not be moved aside, it was found that adhesions existed to an extent which could not be overcome. It was also thought that from this cause, by some impediment exerted on the circulation, the atrophied condition of the body of the organ had resulted. At the end of three hours the condition of the patient became so feeble that all further attempt at reduction for the time was abandoned.

June 19. Ether was again administered, the pulse being feeble and 140 per minute. Drs. Peaslee, Clymer, Perry, Birkhead, and Crispell were present. Although the original condition existed, in less than half an hour all was gained that had been accomplished by the previous effort. At the end of the first hour the pedunculated part of the body had disappeared, and the ring at the seat of the inversion had become so dilated, that by pushing up through it a portion on the right side, the finger was distinctly felt through the abdominal wall by the gentlemen present. It was now evident that the broad ligament, in a mass, was firmly adherent, and that the reduction could not be accomplished, without the ring at the seat of inversion could be dilated sufficiently to admit of the left side of the uterus being reduced first and afterwards the opposite side bodily, by swinging it around through the dilated portion, thus leaving the adhesions intact. But to accomplish this extent of dilatation was almost beyond the expanding capacity of the fingers. I continued, however, my efforts for five hours, occasionally being assisted, towards the close, by Drs. Peaslee and Perry, but no progress was made after the first hour, except to dilate gradually the portion below the seat of inversion to such an extent, that the cervix and uterine canal became lost almost as a continuous cavity with the vagina. For the last hour the circulation became so irregular and feeble that the anæsthetic had to be abandoned, and stimulants, as well as beef-tea, freely resorted to. At length I was reluctantly forced to cease my

efforts for the time, but I was determined to make another attempt, and not wishing to lose what had already been gained, I introduced rapidly five deep interrupted silver sutures into the neck of the uterus, and on twisting them drew the sides of the cervix together over the fundus, thus confining it within the uterine canal, as a cover over a ball. This was done on Wednesday; she soon rallied, and within twelve hours had regained her usual condition, still full of hope and not discouraged by the failure. She was kept in bed, and on the following Saturday about noon she felt something suddenly slip, as she expressed it, with immediate relief from a feeling of fullness which she had experienced since the operation. My impression at once was, that the sutures had torn out, or possibly that the uterus had become reduced, but on examination they were found intact, and on passing the sound between them the fundus was felt behind. I now felt satisfied that the adhesions above had separated, and that I could almost promise success from the next effort for reduction. In case of failure, however, I determined to freshen the edges of the cervix, reintroduce the sutures, and by uniting the parts permanently, to confine the fundus within the uterine canal.

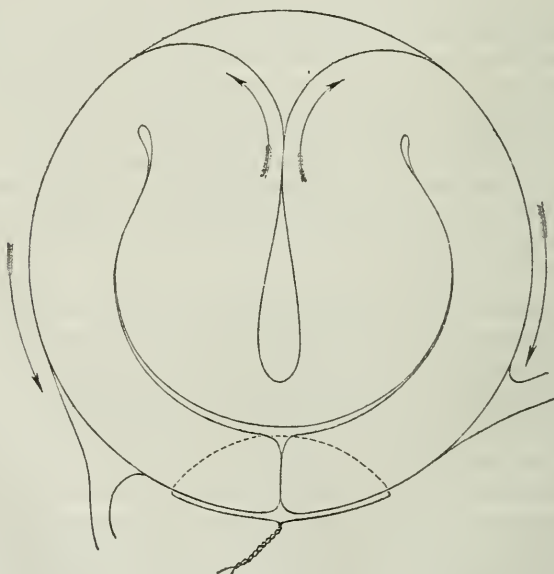
On the following Wednesday, a week after the previous attempt, ether was again administered, and the sutures removed. The fundus immediately dropped into the vagina, while the extent of dilatation was about the same as had been gained, on each previous attempt at the end of the first half hour; but the mass above, supposed to have been the broad ligament, had disappeared. After she had been examined by the gentlemen, in twenty-seven minutes from the time my hand was introduced into the vagina, I reduced the inverted organ unaided, while about five minutes of which time was occupied in ascertaining her condition. Drs. Clymer and Perry were present at the time of reduction; Dr. Peaslee was also at the beginning, but had been obliged to leave a few moments before to see a patient, with the view of returning to aid me afterwards. The effect of the reduction on the circulation was remarkable, for within half an hour afterwards, the heart's action became regular, the pulse full, and reduced from 150 per minute to 90 beats in the same period. Her whole appearance was improved, and her lips, which had been previously bloodless, became of a natural colour. Not a bad symptom supervened; she sat up at the end of a week, and returned home early in July. By a letter from her husband, dated October 26, I learned that she had already regained her previous state of health.

An interesting feature in this case is to determine at what time after labour the inversion was reproduced. Mrs. C., for a year afterwards, was apparently in perfect health, and led an active life, without either she or her husband being aware of a condition which, in a marital relation, would have amounted to a positive obstruction, had the inversion existed during this period to the extent found at my first examination. After the fifth day of the first menstrual period, she was never free from backache, together with a profuse watery discharge, until after the fundus was secured by closing the cervix, and liable to hemorrhage on making the slightest exertion. The attending physician satisfied himself, as has been stated, that the uterus contracted properly after he restored the organ, and I have been assured, from his professional standing, that he could scarcely have been

deceived on this point. Nor is there any evidence that he may have been mistaken, for, so far as we can judge from the literature on this subject, the symptoms of inversion have always been unmistakable, immediately on the occurrence of the accident. Is it possible that nursing her child could have exerted an influence to the extent of keeping in abeyance, as it were, every symptom of this condition, if it had existed during the year after her delivery? On the other hand, while the first menstrual period was painful, it was not more so than had been frequently the case before pregnancy, nor was it increased in intensity at any time during this period, to associate any connection with the act of inversion. From the data presented in the case, I confess myself entirely at a loss to offer even a speculation on the subject.

I believe that the procedure resorted to in this case, by confining the fundus within the uterine canal, will prove to be of the greatest practical importance. Where, from any cause; the attempt at reduction has to be abandoned for the time, an extensive amount of dilatation is thus preserved until the condition of the patient will admit of another effort for her relief. On a moment's reflection, it will be evident that a persistent dilating force is at once established, without taxing the strength of the patient, which may of itself, in some cases, complete the reduction unaided. By stretching the cervix over the fundus, an unyielding mass

Fig. 1



within the uterine canal, a force is exerted on the outside of the organ to roll out the parts above, while at the same time an upward action is at

once established below the inversion, by forcing the fundus as a wedge in the direction offering the least resistance, and any action of either the longitudinal or circular fibres of the uterus, or both together, will aid in the reduction. [The action thus exerted is indicated in diagram 1 by the direction of arrow-heads.] That this force did not succeed in completing the reduction in this case, was due, I believe, to the singularly pedunculated condition of the body; but that the force was exerted to a great degree, is proved by the fact that the adhesions of the broad ligament, when put on the stretch, were separated by its action, although I was unable to accomplish it after a continuous effort of four hours. It requires but little time and patience to dilate fully the cervix and uterine canal by the method I have proposed, so that, if the operation cannot be completed at the time, the fundus can be secured and the same continuous force will be maintained, without endangering the strength of the patient. The point, however, which I wish particularly to establish, is in the treatment of a case proved beyond question to be irreducible, although I should be exceedingly unwilling to acknowledge, under any ordinary circumstances, that this condition was possible. For the future, to amputate the portion of the uterus inverted, if the fundus can be gotten within the cervix, will be, I think, entirely unjustifiable. The inner edge of the cervix should be denuded by scissors, and secured by a number of interrupted silver sutures, or the whipstitch introduced far back from the edge and near the vaginal junction, so as to render it impossible for them to cut out before perfect union had been obtained. In the above diagram, representing by section the left half of the uterus, the course of the suture already twisted, but not yet bent over, is shown by the dotted line. It is not advisable that the scarification, should be continued entirely around the cervical canal, but so as to leave an opening at each angle of the line, for the free escape of the secretions and the menstrual flow. By this means all hemorrhage will be arrested at once; the female will soon recover her strength, and may become pregnant. While under this condition nature may complete the reduction. The band of union would offer but little obstruction to delivery, for if nature did not cause a separation, it could be snipped apart readily with scissors. I would advise, however, before attempting this as a last resort, to simply introduce the sutures, as was done in this case, with the view of making another attempt at some future day, if nature should not complete the reduction. The sutures, if they do not cut out from tension, can be left in for several weeks, provided they are properly bent down flat to the surface. After twisting them over Sims's split shield, so as to just bring the edges together, withdraw the shield, and, while still grasping the suture with the twisting forceps, pass a tenaculum behind the suture, close to the cervix, to be used as a fulcrum over which the wire is to be bent flat, withdraw the tenaculum and make slight pressure with it on the suture near the forceps, as the end in its grasp is turned up in the opposite

direction. The suture should be cut off just at the angle made by the pressure of the tenaculum, and it will then be found to lie perfectly flat, if the manipulation has been properly performed. A silk loop attached to the needle should be introduced first, and the wire drawn through afterwards by its aid. A whipstitch would distribute the tension by relieving it to a great extent at any given point, but it would be more difficult of introduction than the interrupted suture, while the latter, I am satisfied, would scarcely cut out, if a sufficient number were introduced at a proper distance from the edge and not twisted too tight.

Since the publication of my last case (in the April number of this Journal for 1866) I have noticed the report of two successful cases, where the method instituted by me was instrumental in the reduction. In the August number of the *Nashville Journal of Medicine* for 1867, a case is reported by Dr. F. A. Ramsey. The uterus was completely inverted, and presented at the labia. My method was adopted, and after dilating the uterine canal so that the fundus could be carried entirely within the cervix, it was abandoned as a failure in completing the reduction. The vagina was then distended by an India-rubber bag kept inflated so that the fundus could not escape into the vagina; at the end of a number of days the organ was found reduced. Dr. Ramsey attributes his success—unjustly I think—to the use of the inflated bag, which certainly could have been of no service in the beginning, or at all, if the uterine canal and cervix had not been previously dilated sufficiently to have admitted the fundus. It was an ingenious disposition of the case, but the dilatation had been to a great extent accomplished, and could have been successfully terminated in a short time, I believe, if the proper mode of manipulation at this stage had been persevered with.

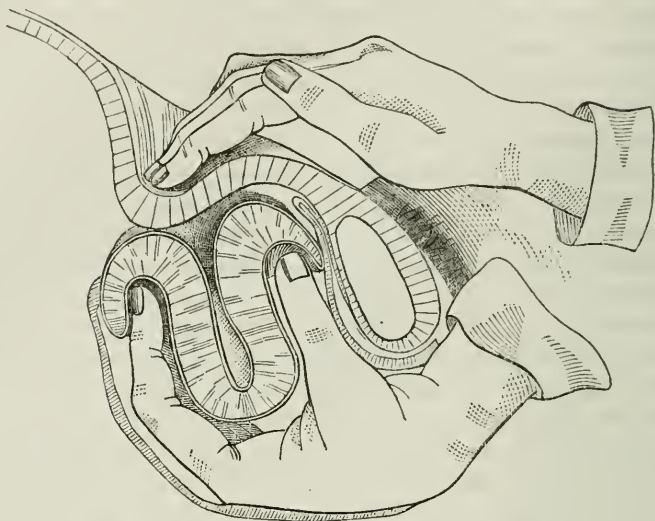
The second case is reported by Dr. Worster, of this city, in the October, 1867, number of this Journal, where he states as follows: "Drs. Emmet and Thomas, in this city, succeeded in returning one after the lapse of seven months, by a peculiar kind of manipulation (see number of this Journal for January, 1866, p. 149, and April, 1866, p. 403). In the case which I am about to relate, this manipulation was also successfully adopted." Dr. Worster, after the second attempt, used Barnes' dilator, to prevent a prolapse of the fundus into the vagina, and to gain a respite of a few hours before resuming the operation. "From time to time I adopted a suggestion of Prof. Thomas, which in Dr. Emmet's case had seemed advantageous, of drawing down the uterus as far as possible, and then carrying it suddenly upwards, to pass it through the os and cervix, but unsuccessfully." In justice to the other gentlemen who assisted me, Drs. Sabine and George T. Elliot, but especially the latter, I should state that Dr. Thomas's connection with the case was but slight in comparison, as he was obliged to be absent during a greater portion of the time, although the reduction was completed in his hands. For over two hours and a half I conducted the reduction

unaided, until, becoming exhausted, Dr. Elliot and the other gentlemen present aided me in turn, until the condition of the patient was becoming too critical to continue. Dr. Thomas at this juncture returned, after an hour's absence; in turn he passed his hand into the vagina, and, as he described it, *drew down the mass so as to reproduce the inversion*, and, on immediately returning it, found that it did so beyond its previous position; he repeated this manœuvre, and on returning it again on the point of his finger (*without force on his part, as he stated*), the fundus passed on, and the reduction was completed, after an effort of three hours and fifty-five minutes. On presenting the case before the New York Obstetrical Society, I stated that I thought Dr. Thomas was mistaken as to the extent of reduction made by him. The portion below the constriction was flaccid, and could be readily drawn down; but above the engaging point, where the surfaces at this stage were forced into such close proximity, it was a question whether more force would not have been required to reproduce the condition existing at the beginning, than it was possible to have exerted. The final effort on his part doubtless hastened the issue; yet, as the widest portion of the uterus was already so far advanced within the canal, it was possible that the muscular action of the organ itself might, at this stage, have soon completed the reduction, as, from the result, the canal was evidently already dilated sufficiently for the purpose. I likened the condition to an India-rubber ball which had been indented; as soon as the action of recovery had once commenced, the progress of restitution rapidly increased to the consummation. The case was discussed at length by different members of the society, to the above effect, and this view was supported by Dr. Elliot, who was present; and, in fact, Dr. Thomas himself, with great candor, stated that he was satisfied that he had been mistaken.

That the method has not succeeded fully in the hands of others, is either due to the fact that the different steps have not been understood, or the attempt has been made to accomplish too much in too short a time. I will, therefore, briefly recapitulate the mode of procedure, which has already been given at length in my previous reports. A table about three feet high should be used, the patient etherized and placed on the back. Introduce the entire hand into the vagina, and the fingers within the cervix, so as to enable the prolapsed portion with the fundus to lie in the palm of the hand. The canal is to be dilated by rapidly expanding the fingers until the seat of inversion has been reached. At this point grasp firmly the portion of the body just below the seat of inversion, push it steadily up, while counter-pressure is made by the other hand over the abdomen, making the attempt to roll out the parts by sliding the parietes over the border of the ring, at the instant that the fingers are expanded within the uterine canal to their utmost. In this order the procedure must be conducted until the fundus can be passed entirely within the cervix. It now becomes a matter of perseverance on the part of the operator, so long as

the strength of the patient will safely admit of a continuation of the effort. As the fundus advances within the canal, the fingers cannot be separated to the same extent, and the effort must be confined chiefly to the upward

Fig. 2.



pressure of the parts grasped by them as near the seat of inversion as possible, while using at the same time the other hand above to slide the abdominal wall over the slowly dilating ring. There is still, however, a dilating force exerted by wedging the fingers between the prolapsed portion and the sides of the canal; for in proportion as the uterine canal in this condition is enlarged in its lateral diameter, must the reduction be advanced by shortening the opposite one. It is well also occasionally, at this stage, to alternate the pressure so that it shall bear to first one side and then to the other, instead of continuing the attempt to press the mass directly through always in the same direction. Sometimes it should be a hand to hand motion, as in delivery of the head by forceps. On the same principle, the vagina, for a moment or two at a time, should be placed on the stretch by making steady pressure in the direction of the promontory of the sacrum. By changing thus the direction of pressure in the last stage, a portion will sometimes suddenly slip up, when a moment before the parts have seemed immovable, from being wedged in such close apposition. By resting the back of the hand in the hollow of the sacrum, so as to turn the organ up against the abdominal wall above the pubes, the hand of the operator is placed in a less constrained position, while at the same time the uterus is so steadied that the counter-pressure to be exerted by the other hand is maintained to the best advantage. Towards the close of the operation,

the advance of the fundus is hastened beyond question by a rapid change of fresh assistants, so that the force may be as nearly a continuous one as possible, and not allowed to flag from the fatigue which must follow the prolonged efforts of any one person. This plan was suggested by Prof. Elliot in my first case, and my experience since has fully confirmed its great importance. Too much must not be attempted at first, for until the vagina has become somewhat dilated, and the hand of the operator accustomed to the manipulation, his efforts in the beginning will be to a great extent lost, in consequence of his hand becoming almost powerless from cramp. I experienced far more fatigue formerly than in this case, for I learned to husband my strength until the fundus could be passed within the cervix, when it could be made available to the greatest advantage. I am satisfied that, without regard to its duration, we now possess the means of overcoming a condition which but recently was considered by the profession as almost hopeless. From the success in this case, I feel that this may be justly claimed, as it is scarcely possible that a more severe test to the method could be presented, except it be in some case where adhesions are proved to exist to such extent that it is an impossibility to overcome them.

79 MADISON AVENUE, NEW YORK.

ART. XII.—*Case of Fibrous Tumour of the Uterus, successfully treated by Incisions into its Substance, the Os and Cervix being previously dilated by means of slips of the Laminaria Digitata, and subsequent Extraction.* By JOS. WORSTER, M. D., of the city of New York.

Mrs. K., native of England, aged 27 years, of lymphatico-sanguineous temperament, presented herself to me, Jan. 10th, 1866, to be treated for a uterine tumour, attended with much hemorrhage, of the existence of which she had become cognizant about three years before. Six years ago she had given birth to a child, after a perfectly natural labour, but had, ever since, been troubled with more or less sanguineous discharge. She had consulted several medical men, both in England and this country, but all had declined to interfere with it, owing to its extensive attachment to the inside of the uterus.

On examination, the os was found patulous; on further dilatation, the tumour was found to fill the uterine cavity entirely, having an attachment extending from the os internum for two-thirds of the entire length of the uterus, which was greatly distended. The surface of the tumour so felt was smooth.

In its longitudinal diameter it measured six and three-quarter inches, in its transverse, four and a half inches; and did not bleed on touch, as polypus does. Hemorrhage was profuse and frequent, attended with repeated syncope, palpitation of heart, pain in back, œdema of feet and ankles, and anasarca throughout; indeed, a general appearance of anæmia. I first attempted, by means of the introduction of slips of the laminaria

digitata (sea-tangle), to dilate the os uteri sufficiently to encircle the tumour with a ligature; but this, owing to the width of its base, was found to be impossible. I then determined, by repeatedly incising the tumour, by means of a uterotome (Civiale's instrument for the urethra, using it as a hysterotome), to cut off the supply of blood and effect its disintegration, keeping up the dilation of the os by the means above mentioned, and using astringents to restrain the hemorrhage. I made, on twelve different occasions, from fifteen to twenty incisions into the substance of the tumour, on either side of its base, sometimes first through the base, right and left. Much blood was at first lost, but the bleeding ultimately ceased, and a considerable reduction in the size of the tumour took place. These operations occupied the time between the 22d of January and 18th of February, a period of twenty-seven days. Desirous of obtaining more room within the uterine cavity, for the continuance of my operations, I made persistent efforts at further dilation of the os and cervix uteri, as follows:—

February 20. Introduced four slips of laminaria, which were allowed to remain until fully expanded: fourteen times that of the original size of the slip: a fact not generally known.

22d. Introduced a long sponge tent, three-quarters of an inch in diameter and three inches long, leaving it in for two and a half days.

25th. Patient being placed under the influence of chloroform by my son, Dr. W. P. Worster, I introduced into the os *thirteen pieces of laminaria*, measuring two inches in diameter; a very severe form of painful uterine contraction ensued, which caused me to remove them prematurely. The effect, however, was to cause the tumour to protrude at the os, from the expanding of the laminaria from above downwards. The fetor of the discharge was at this time intolerable, and coagula escaped daily, causing much debility. The bulk of the tumour is rapidly diminishing.

March 1. Introduced an India-rubber dilator, and continued the dilatation until the 8th, when I succeeded in introducing the fingers and part of the left hand, on which I passed up a pair of vulsellum forceps, and having obtained a firm hold of the tumour, after a somewhat protracted and forcible traction, *I extracted the entire tumour*. The base had become softened by disintegration, from the cutting off of the supply of blood, which facilitated the dislodging of the mass. The debris, balance of the pedicle, or attached portion, followed in a few days.

15th. The position of the uterus is normal. The patient is doing well, but very weak from loss of blood, the shock of the operation, &c.; under the use of brandy in very profuse quantities from the beginning of these operations, tonics, including quinia, iron, and the chlorate of potass, she regained her strength, and the natural rosy tint of her complexion, previously as white as marble.

29th. She sailed for the West Indies, being in good health and spirits, and delighted at her riddance from her troublesome companion.

This case may be stated as one of fibrous tumour developed in the parietes of the uterus, covered by a thin layer of uterine fibre, having thus a broad attachment to the side of the organ; a true intra-mural hysteroma; not a pediculated polypus, covered only with mucous membrane. The treatment consisted of two parts: one, the incisions into the substance of the tumour, by which its vitality and growth were diminished, and its substance disintegrated; the other, the enucleation of the tumour itself from its investing layer of uterine muscular fibre, and its extraction.

Operations for the radical cure and removal of uterine fibrous tumour are of recent date. In a paper on this subject, by my friend Dr. W. C. Roberts, of this city, published in the *New York Journ. of Med.* in 1849, which, at the time, was, perhaps, the most complete monograph on the subject in our language, on p. 34 (note), is given a case from the *Rev. Méd.*, Dec. 1841, reported by M. Filhos, in which Amussat enucleated, by means of the fingers alone, a fibrous tumour contained in the uterus. In a list of twenty-one cases, in which enucleation was practised, contained in the Lettsomian Lectures, &c., delivered before the Medical Society of London in 1863, by C. H. F. Routh, M. D., "On Fibrous Tumour of the Womb," the first reported is by J. B. Brown, in 1859; of these twenty-one cases, fourteen are cited as recoveries. The processes employed are gouging out pieces, breaking down tumour with sharp scissors, after previous incision of the os and cervix; cutting through capsule and gouging out a piece; removing a portion from the vagina and subsequently pulling out the whole mass; enucleation of half lower portion on the first day, application of whip-cord around separated portion, entire removal after much traction and manipulation three days after; incision of posterior wall and removal of three-fourths of tumour by bistoury, entire removal, in two parts, by tenaculum; enucleation of three-fourths of tumor, which soon after descends and is extracted; incision of cervix on both sides, and extraction of tumour by pincers; os and cervix incised and *tumour broken up* (how, not stated); enucleation, in part with hand, in two operations; tumour crushed by lithotomy forceps, and then as much removed as possible by Simpson's p'tome (*sic*?).

The operation I have reported differs from any of the above reported in the incisions which were made into the substance of the tumour, and perhaps, *in the mode of dilation of the os by the laminaria*, the tumour being subsequently enucleated and removed by the vulsellum. It adds another to the list of recoveries from this rather dangerous operation, in which the risks of hemorrhage, pyæmia, shock, and peritonitis are frequent and considerable. Yet the balance of success is greatly in favour of the operation, which, when cautiously performed, is certainly justifiable, and offers a fair prospect of recovery from an otherwise incurable, perhaps ultimately fatal, malady, and must be considered as a considerable advance in and triumph of obstetric surgery, and an important addition to our means of affording relief in a very frequent cause of danger and suffering in the female sex.

Mr. Hutchinson, in *Med. Times and Gaz.*, 1857, relates thirty-nine cases in which enucleation was practised. Routh has added twenty-one. Enucleation is primary when completed at the time, or within a day or two; secondary, when gangrene is induced. In the first, the incisions must be free and pass deeply down into the tumour, completely dividing the capsule and facilitating its bisection, if that should be necessary. It is not well

to draw down the tumour too strongly, as cellulophlebitis, or peritonitis, is apt to follow. Atlee, in secondary enucleation, gave ergot in repeated doses, then incised the capsule and separated the tumour from the cyst with the finger or scissors, continuing this from time to time, until the tumour sphacelates and comes away by pieces, or what remains is susceptible of removal.

Brown, as before said, uses the gouge or scissors; but latterly, as a safer process, incises the os, subsequently carrying the incision right through a portion of the tumour (see a case in *Obs. Trans.*, vol. iii. p. 76), dressing the cut surfaces of the tumour with oiled lint and plugging the vagina. The dressings are removed in forty-eight hours, and daily injections of the vagina employed. The mere incision causes sloughing in the tumour, which disintegrates, diminishes, and finally disappears. Routh thinks that a series of small and successive wounds is safer than one large one, as producing less constitutional disturbance.

120 9TH STREET.

ART. XIII.—*On Atresia Vaginæ.* By PHILIP HARVEY, M. D.,
of Burlington, Iowa.

RETENTION of the catamenial secretion from an imperforate vagina is sufficiently frequent to present strong claims to notice. It is replete with danger, calling imperatively for early aid by surgical means, as it is liable to be seriously complicated by delay. Not only is the uterus distended in these cases, but the Fallopian tubes, which will not safely allow of much distension, are also implicated; and these tubes, when largely distended by retained menses, may be ruptured. Moreover, peritoneal adhesions are liable to occur over the attenuated and irritated tubes, and their laceration has sometimes followed a sudden evacuation of the uterine cavity, from the subsidence of the organ and consequent dragging on the adhesions. The confined fluid may also be forced into the sac of the peritoneum through the apertures of the fimbriæ; and in whatever way the effusion may be caused, death is pretty sure to be the result. Hence it has been properly suggested that the uterine tumour in such cases should never be allowed to reach the level of the umbilicus before attempting to give an exit to the fluid. These remarks premised, I submit the following case:—

Mrs. W., aged 24, was delivered of her first child between two and three years ago. By all accounts, the labour was a difficult one, and her attendants thought it necessary to use the forceps. By some means the os uteri and vagina were badly lacerated, the rent, I am told, extending into the rectum. For two years, or nearly so, afterwards, she experienced fetid and purulent discharges *per vaginam*, and the monthly flow was regular. About seven or eight months ago, she tells me, the vaginal discharges ceased, and

with them the menstrual flow. After a few months she perceived an enlargement of the uterus, with expelling efforts, increasing at each monthly period. When she came under my care, about six months afterwards, I found the uterus considerably enlarged, the fundus rising to near the level of the umbilicus. The vagina terminated in a cul-de-sac two or three inches deep, puckered at the bottom into a hard and ligamentous cicatrix, beyond which could be felt an apparently solid tumour. Her pains, she said, were intolerable, and she was desirous of something more effectual being done for her relief than the administration of anodynes; accordingly, I proposed the operation of dividing the united parts at the bottom of the vagina, which she consented to at once. By cautious transverse strokes with a narrow-bladed knife I divided the united parts upwards in the direction of the cervix uteri, till the cavity was reached, when about a quart of what appeared to be semi-coagulated blood gushed out. The relief was perfect and immediate. A tent was retained in the aperture for a few days after the operation; since then the wound has been kept from closing by the introduction of a large-sized bougie once or twice a day, and she has menstruated three times since the operation, without difficulty. I did not consider a large opening desirable, regarding the wound as a substitute for the os uteri, and not for the canal of the vagina. On first introducing the finger through the wound, I noticed that it passed at once into the cavity of the uterus, no cervix nor os being felt. Three months have now passed since the operation, and the patient declares she has nothing further to desire on the score of health and comfort. She considers herself as well as she ever was. I do not think it will be safe to dispense with the introduction of an instrument for some time to come; the wound may otherwise close, though it does not seem disposed to do so.

ART. XIV.—*Cases of Inflammation occurring under Peculiar Conditions, with some Thoughts and Reflections on the Nature, Constitution, and Purposes of this Organic Process in the Animal Organism.* By SAMUEL JACKSON, M.D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania; Member of the American Philosophical Society; Fellow of the College of Physicians, Philadelphia; Corresponding Member of the Imperial Academy of Medicine of Paris.

PROF. PAGET, in his *Surgical Pathology*, states that "in truth we know less of inflammation than of the reparative process." This admission, by so high an authority, leaves the subject of inflammation an open question, and justifies further attempts to ascertain the nature and intentions, if such exist, of this important organic process of pathology. Inflammation is probably the most common of the disorders that attack man and the more highly organized animals; and occurs in individuals of the most varied constitutions, temperaments, and organic conditions. Inflammation is not a simple process, and consequently its characters are influenced and determined by the above conditions—particularly by the healthy or

corrupted state of the blood, one of the chief elements of the process. A common fact proves this statement; a simple prick or incision made with a clean scalpel is perfectly harmless—but if made by one soiled with organic matter in dissection, the blood becomes contaminated, and the slight healthy inflammation necessary to heal the wound is impossible, and death frequently ensues in a few days. Many such cases occur from post-mortem examinations, and some few from anatomical dissections.

It is my impression that the modifications produced by the above conditions in the component elements of inflammation have not been sufficiently studied and analyzed. In the course of my experience I have met with three cases in which acute inflammation was rapidly produced under conditions in which its existence would seem impossible.

CASE I.—The first case was that of Dr. J. R. Monges, a highly respectable French physician, who, escaping from the massacre at St. Domingo, in 1793, sought refuge in our city, where he established a professional reputation and lucrative practice. In 1798 he had an attack of pneumonia of the right lung, from which he recovered, but with that organ chronically damaged. This lesion continued until his death. It was attended, throughout that period, with daily cough and expectoration, mitigated in summer and aggravated in winter, so much as frequently to confine him for a time to his room. Though feeble, he was able to pursue his practice until the last two years of his life. In the commencement of May, 1827, his appetite and digestion gave way, and there ensued a disgust—or, as he called it, a horror for food; he could not bear the sight of it. He was sustained chiefly by light French wines. Anasarca soon ensued, ending with general dropsy. On the 26th May I saw him at 6 P.M. No unusual symptoms appeared; he was evidently approaching his end; was very feeble and pulseless, but with clear intellect. At 10 P. M. I saw him again. On entering his room he exclaimed, "See, Doctor, what a state I am in!" Each hand was supported on a pillow, with all the appearance of an attack of gout—a disease he had not been subject to—swelled, red, warm, and excessively painful. An evaporating lotion was immediately applied, which soon arrested the attack.

I saw him again between 2 and 3 A. M. He had fallen into a quiet sleep, from which he awoke after a short time; recognized me, and insisted on my going home to bed. He died not long after daylight on the 27th May, 1827, at the age of 69 years.

In this case acute inflammation was developed in less than four hours, but was arrested in its first stage by the application of a remedy.

The *autopsy* demonstrated the superior lobe of the right lung as being thoroughly disorganized. It was adhering strongly to the ribs, and had the appearance of liver, though of darker colour. Several cavities, none larger than a small walnut, were diffused through this structure, filled with a thick matter similar to that he had expectorated for so many years, and were doubtless the seats of that secretion. The lower lobe was to a great extent normal; air vesicles and crepitation existed, but when cut into, a red fluid escaped rather freely, as though there might have been recent congestion.

CASE II.—September 8, 1840, Mr. B. called on me. He had just arrived from North Carolina by sea in a trading vessel, in the course of

which he had been much exposed. He came to consult me respecting periodical spasmodic attacks of the œsophagus, to which he had been subject for seven years. During the attacks he could not swallow either fluids or solids. They had increased in severity of late, and he had become exceedingly emaciated and feeble. On the 9th pleuritic symptoms were developed from exposure on his voyage. He was able to swallow a small quantity of soup. In the evening his sufferings from the pleurisy were intense. There was no cough. Dry-cups and fomentations gave some relief, but he sunk, before morning, from extreme exhaustion.

Post-mortem.—The œsophagus was completely denuded of epithelium from the fauces to the cardiac orifice of the stomach, and the whole mucous membrane destroyed in different portions. A recent effusion of jelly-like, coagulable lymph (fibrin) was adhering to the costal pleura, about the middle of the right side of the thorax, for the space of a moderate-sized hand, and opposite to it on the pulmonary pleura a similar jelly-like mass of the same size was adhering to the middle lobe of the lung: the effusion, from appearance, might be estimated at two ounces at least. The heart was pale, wrinkled, and atrophied; the other viscera were normal.

In this case there is an instance of active inflammation of high intensity in an individual in a state of great exhaustion and emaciation from inanition and deficiency of blood.

CASE III.—I was called to see Mr. G., in consultation, whom I had attended four years previously for subacute endocarditis, from which he had recovered. Three years after, he brought on another attack from political excitement and improper living. I found the patient nearly moribund, respiration was difficult and irregular; percussion on the left side, dull and flat, revealed the presence of a large effusion. Auscultation of the heart was impossible and useless. The right side was the seat of sharp pleuritic pains, which had come on early that morning. The previous night, the sense of suffocation had become so intense that he insisted on sitting at an open window without sufficient clothing, although the temperature was below freezing; the relief he felt induced him to remain a long time exposed in that manner. This was, without doubt, the cause of the pleuritic attack. He died towards evening.

The *autopsy* demonstrated hydrothorax of left side; the pericardium was distended with fluid and disorganized. The point of interest was the pleura of the right side. The lung was healthy; a large, soft, jelly-like, coagulated mass of slight brownish tinge was adhering to the costal pleura, at the seat of pain, and a similar mass immediately opposite was attached to the surface of the lung; the two, it was evident, had been united and torn apart by the collapse of the lung when the thorax was opened.

The first case cannot be considered a perfect inflammation; it was the forming stage arrested by the sedative treatment; in the other two cases are to be seen samples of the first stage of acute inflammation, fully developed, terminating with the effusion of a large portion of an organizable material. This is the second stage in which there is a conversion of that material into a tissue of a low state of organization.

These two cases are specimens of normal inflammation, or that which was called healthy by John Hunter; they also show the local nature of inflammation, as also its independence of the general circulation, and of the

old notion of a *vis-a-tergo*. They also demonstrate that the increased fibrin is generated locally, and appears in the general system through absorption.

In these cases the blood had not been contaminated, nor its crasis been depraved.

The water was in excess (hydræmia); but the solids—albumen, fibrin, and corpuscles—were normal, and these are the active agents and constituents of inflammation.

Inflammation is a complex process, of which the blood is the seat. It is the commonest of the pathological actions of the animal organism, yet formerly it was an impossibility to know its nature, its component elements, or its uses, from the imperfect knowledge of the constitution of the blood and its capillary circulation. Celsus, who lived at the first period of our era, gave it an identity by the derivative definition of it as “swelling, redness, heat, and pain.” From that time, not a single fact was added to, or any change made in this formula, venerable with the stamp of age, until the last decade of the eighteenth century (1793). The long, deep lethargy of the medical intellect on this most important process of organic nature was broken up by the original genius, the expansive and vigorous mind of John Hunter. He impressed on medical investigations a higher direction, a more elevated order of subjects, in showing that the laws of life are the only sure basis of medical science; and asserted a principle having an important bearing on inflammation, the vitality of the blood, to which he attributed its power of forming and uniting solids.

He pointed out a most material fact in inflammation, almost forgotten at this time, that there are distinctions in what may be called inflammations. One form was salutary, protective, defensive, and reparatory. This he names true inflammation; “healthy” inflammation (normal would be better). It is the agent or instrument of nature, often named the *vis medicatrix*, called into action when the primary organic formative or organizing action is disturbed, perverted or rendered destructive by some foreign, adverse, or irritative cause.

Hunter discovered the use or purpose of inflammation, but could not discern the process by which it was effected. In his time, the knowledge of the constitution of the blood was very imperfect, and that of the change it undergoes in inflammation was unknown. His failure was the inevitable consequence of the ignorance of these facts. The most powerful intellects will be baffled in the search of truth in the absence of verified facts.

In the first quarter of this century the principal organic constituents of the blood were determined, and it was ascertained that in health their proportions were definite; thus the cipher per 1000 parts is, of albumen 67 to 70 in the dried state; that of fibrin 3, and of red corpuscles 110 to 140; white corpuscles too numerous to be estimated. In 1840–42, MM. Andral and Gavarret discovered what is now the crowning fact of inflammation, the

immediate increase of fibrin in the blood, rising from its normal cipher 3 per 1000 to 5, 7, 9, even to 10.

The fibrin is produced from albumen; these bodies are allotropic (that is, similar in chemical elements, but differing in chemical and physical properties) and are mutually convertible into each other. M. Claude Bernard established this fact and has shown that fibrin exists in the blood of the renal artery, but not in that of the renal vein, while the albumen of the last is increased equally to the lost fibrin.

True, normal, Hunter's "healthy" inflammation, the remedial agent of nature consists, in the augmentation of fibrin in the blood, with local raptus, congestion, and effusion. Without increase of fibrin there is no inflammation; there may be perversion of the plastic nutritive process, or destructive action, as ulceration of an indolent character, stationary and passive to all treatment for months. The process of inflammation or augmentation of fibrin in arresting the first stage of the morbid action existing in a living structure, is the effusion of the liquor sanguinis saturated with fibrin, and filling up the entire seat of the disease and even extending beyond it. Coagulation of its fibrin takes place, and the whole of the structure involved in the disease is at once carried down to the lowest degree of vitality, probably below that of bone or cartilage. All organic action, morbid or natural, is suppressed when this process is perfect; the disease is at an end; it has been, as it were, stamped out. The surreptitious organization when large, for a time remains passive; its removal is effected in several modes, viz., resolution, suppuration, moist gangrene. The process is most clearly demonstrated when it occurs in large organs, as the lungs in pneumonia, in which the different stages advance in regular order, having well defined characters, easily recognized by auscultation and percussion.

It is not necessary to describe the signs of the different stages in pneumonia; they are recapitulated and dwelt upon in every work on that disease, and in general works on practical medicine. It is sufficient to state that blood abstracted in the earliest period, that of congestion or engorgement, when coagulated shows a firm clot, in which the red globules are inclosed, rounded like a cup—whence it is often called cupped—with a dense white layer or crust on its upper surface, which has been named the inflammatory buff, or buffy coat. It is common to all acute inflammatory diseases, and is met with in no other. An apparent exception exists in the blood in a state of anæmia, which, drawn and coagulated, shows on the surface a thin, soft, and mostly imperfect, white layer. The cause of this is the large diminution of the red corpuscles, the fibrin remaining the same.

In pneumonia, when blood is drawn, the greatest attention should be paid to the characters of the coagulum formed. Most valuable indications as to the mode of treatment to be adopted, and the remedies to be employed, will be obtained. If the clot is firm and dense, is not loose and flabby,

nor infiltrated by the serum, and if raised by a small scapula or knife run into it, sustains its own weight, and with dense white layer of variable thickness, then, in these facts, is asserted a healthy state of the blood and normal, reparative inflammation; let the doctor watch and take heed not to disturb this favourable state. Practitioners of repute in former times were perfectly aware of the value of the above characters and the indications offered by the coagulated blood. Baglivi, in speaking of pneumonia and pleurisy, asserted that it was a bad sign when a white buff or coat was not formed on the blood. Huxham gave the same opinion on this sign in other inflammatory diseases. M. Louis states that he has observed that in one-fourth of the fatal cases of the above diseases there was no buff on the blood. Huxham made a free use of the lancet in the treatment of pneumonia, but was governed by the presence and characters of the inflammatory buff on the blood; and when they were unfavourable he stopped and "changed his battery." He insisted on the importance as a sign of an imperfect buffy coat.

When in inflammatory diseases the blood has no buffy coat, or it is thin and greenish, and the clot is soft, diffuent, and contains the larger part of the serum, there is a strong probability that the blood is in a morbid state, or contaminated with some poison. Patients with smallpox, or other eruptive fevers, when those diseases were prevalent as formerly, were frequently attacked with pneumonia; the buffy coat, it was then observed, was mostly absent or very imperfect.

Early in my practice, a case of pneumonia came to my notice in which no fibrin existed in the blood. When on a professional visit to the hospital of the old almshouse, I was requested to see a patient that had been brought there the previous afternoon. He was in so low a condition he could not be carried up to the men's medical ward, situated in the fourth story, and had been placed in an adjoining out ward. I found him evidently moribund, pulseless, with low temperature, difficult breathing, nearly unconscious, and in a low delirium. He died in a few hours.

The history of the case represents him as a perfect sot; and that, two nights before, being drunk, he had laid out in the street in a cold winter's night. He had been seen by a physician who said he had pneumonia.

The next day a post-mortem was made. On raising the sternum, the right side of the thorax appeared empty at the first glance, but on looking into it, the lung was seen lying flat on the back of the chest, resembling a sack filled with blood. On a closer examination it was found to be so softened as to tear with a slight effort; it was saturated with fluid blood; no coagula existed in the heart or vessels. This case made a strong impression on me, and was often cited in my lectures when treating of the blood and its coagulation.

The following table, from the *Essai d'Hématologie Pathologique*, par G. Andral, shows the division of the fibrin in five cases of acute inflammation; three of pneumonia, and two of acute rheumatism:—

1st case of Pneumonia:

Total fibrin, 9.2	{ Fibrin of buff, 8.1
	{ Fibrin of clot, 1.1

2d case of Pneumonia :

Total fibrin, 9	{ Fibrin of buff, 5.8
	{ Fibrin of clot, 3.2

3d case of Pneumonia :

Total fibrin, 7.3	{ Fibrin of buff, 4.8
	{ Fibrin of clot, 2.5

1st case of Acute Rheumatism :

Total fibrin, 8.7	{ Fibrin of buff, 7.0
	{ Fibrin of clot, 1.6

2d case of Acute Rheumatism :

Total fibrin, 9.2	{ Fibrin of buff, 7.5
	{ Fibrin of clot, 1.7

John Hunter appears to have supposed that the bloodvessels possessed some special action in inflammation, and even in most of the vital actions. This doctrine was firmly held by the greater number of the profession thirty years ago in Europe and this country. It was common at that period to attribute the nutritive process, secretion, and most of the vital actions to "capillary action." It is now known as demonstrated by M. Cl. Bernard and M. Marey, that the vessels are passive, and their actions simply physical, being limited to expansion and contraction.

The immediate agents of the capillary circulation are the system of the arterioles, intermediate between the capillary system and the arteries, which are regulated by the sympathetic and the spinal nerves. The arterioles have been regarded as the termination of the arteries; but the differences of structure, especially in being largely provided with organic, unstriated muscular fibres, connected with the complex system of spinal nerves, the last of which includes a sympathetic nerve, and, having an independent action and function, they must be regarded as a distinct system. They are the regulators of the capillary system and its circulation, and not the heart and arteries. (M. Marey.) To explain the mode by which these operations are brought into action would extend this paper beyond its proper limits.

This form of inflammation is the only disease in which increase of fibrin occurs, and a buffy coat is always formed on the surface of the clot of blood drawn from a vein into a proper vessel. It is a special form of disease; it presents some other peculiar characters belonging to the red corpuscles, which acquire the property of adhering to each other when in contact, and forming rouleaus when free. In consequence they cannot circulate in the smaller vessels, which are blocked up by them, and the circulation of the diseased part is arrested. Prof. Lister supposes that they contribute, in this manner, to the exudation of the liquor sanguinis, enriched with fibrin.

The production of fibrin in the specific inflammation, the subject of this memoir, can effect its purposes in nature only when its constitution and its coagulating action are perfectly developed. This cannot take place except the blood, and especially the albumen, from which fibrin originates, is in a normal or healthy state. These conditions are variable, and then the

fibrin is equally unstable in its character, and rendered unfit for its allotted office in physiological therapeutics. The causes that derange the constitution of the blood and fibrin, destroying its natural and remedial powers, are too numerous to recall; they can only be slightly indicated. Such are habits of life, modes of living, quality and quantity of food and drink, the quality of the air breathed, atmospheric contamination of various kinds, malaria, and prevailing epidemics. The disturbing action of these are most strikingly displayed in pneumonia. When the constitution of the patient is good, little more is required than to watch the course of the disease; the inflammation will take care of itself. It is the patient himself who is to be carefully looked too; his forces, which are to carry him through the conflict, are to be judiciously sustained, and all disturbing causes, moral and physical, guarded against. In cases of pneumonia, and when the antiphlogistic treatment had been fully carried out, convalescence is difficult and protracted. I have known two deaths to occur evidently from exhaustion. A limited portion of a lung had been the seat of disease, and was nearly restored to its natural state, and yet death took place with the disease extinct. Prof. G. B. Wood says there is reason to believe that in pneumonia patients have been starved.¹ In the Southern States, pneumonia, for many years, has been very prevalent in the latter part of autumn, and in the winter months. The death-rate of the cases was generally high, which was attributed to the effects of malaria.

In February, 1858, I had an opportunity of observing two cases of pneumonia, presenting the strongest contrast in every respect. The one was a perfect specimen of what may be termed regular, normal pneumonia; the other of an anomalous and irregular character.

The first was that of a gentleman of high reputation in the medical profession of our city. He was attacked with the ordinary symptoms of pneumonia on February 11, and treated himself the first four days. He had sharp pain on the right side; cough; the sputa was tinged with blood, and of a rusty colour. He did not lose blood generally or locally. He took pills of ex. hyoscyamus and opium, with regimen. On the fourth day he was attended by a medical friend. The first stage had passed, and the second; congestion and engorgement had taken place, causing oppressed breathing and restlessness; the fingers were bluish. Dry-cups were applied, and pills of calomel, opium, and ipecac prescribed. I saw him, in consultation, at 8 P. M. Auscultation and percussion proved that the third stage was rapidly advancing. The right lung was nearly solid; no râles were heard in front; some mucous râles were perceived behind. At the middle and lower part of the chest there was a dull sound. His colour was good; morale excellent. The sputa was now without colour. Strong soup was ordered.

19th. Had rested well; his skin was dry; there was no sound in the right lung; a perfect stillness prevailed. He relished his breakfast. The pulse was soft and full. The soup was continued.

20th. Improving; the tubular sound commencing.

21st. Respiratory sound returning just below the clavicle.

¹ Wood's Practice of Medicine, vol. ii. p. 30.

23d. Right lung in same state. R.—Muriate of ammonia.

27th. Respiratory sounds returning.

March 1. Vesicular respiration not completely restored.

Soon after, I was requested to meet a medical friend in consultation in a case of pneumonia. It was in the tenth day, yet had not advanced beyond the second stage. The patient could not lie down; he was constantly expectorating pure blood. Examination demonstrated throughout both lungs gurgling râles, showing the blood fluid. No change was effected in this state, and two days after he died, expectorating blood to the close. I was assured that this patient was a gentleman of temperate habits and of regular life—he had suffered in his business from the commercial and financial crisis of '57-58. For many months he had almost daily been subject to mental anxieties and physical exertions, with irregularity in his meals—his place of business being remote from his residence. Is it possible that those causes can so disorder the blood as to render the transformation of albumen into fibrin impossible?

The views and principles presented in this paper are not recent with me. It is now over twenty years since I introduced them into my lectures; and taught that the increase of fibrin in the blood is a law of the animal organism, and a special agent intended for protection and repair. The process might properly be termed Fibrinous Inflammation.

ART. XV.—*Fracture of Pelvis at Symphysis Pubis and Rupture of Bladder.* By S. D. SEELYE, M. D., of Montgomery, Ala.

ARCHIE MASON, aged 32 years, a labourer engaged in excavating a railroad on the outskirts of the city, received an injury on the 2d July by the falling of a mass of earth weighing from one hundred and fifty to two hundred pounds, which was detached from the upper edge of the cut, a distance of twenty-five feet above him, and *slid* down the inclined plane, striking him in the back when partially bent while using the pickaxe. The mass prostrated him without crushing him beneath it. He was picked up and carried to his quarters, and thought not to be seriously hurt. The physician in charge of the hands, Dr. F. M. Hereford, was not sent for until the next morning; when, on examining the patient's back carefully, he found no ecchymosis; the abdomen was tympanitic and somewhat painful, but not very tender upon pressure; pulse 120, feeble; decubitus on back, with knees drawn up. Had passed no urine since the injury, but had emptied his bladder just before. Refers all severe pain to the sacrum, some fulness and slight ecchymosis in the perineum. Dr. Hereford with some difficulty introduced a catheter, but no urine flowed through it.

At this time I was requested by Dr. Hereford to see the patient with him. The catheter had been left in the urethra, and on withdrawing it about half an ounce of urine and some small coagula followed it. Not being satisfied that it had entered the bladder, chloroform was administered, and a No. 8 catheter tried; but the end of the instrument could not be depressed between the thighs; but with the finger in the rectum I could feel the point of the instrument beyond the prostate gland. No urine flowed through it, but, as before, upon withdrawing it, about half an ounce to an ounce followed the instrument.

The diagnosis seemed obscure. The history which we then had of the mode of injury did not lead us to suspect a fracture of the pelvis; nor did his symptoms suggest it. Having emptied his bladder not more than five minutes before the accident, a rupture of that viscus seemed not probable. Yet from the gravity of his symptoms, and the general look of distress, we could not but conclude that there was serious lesion of some of the abdominal viscera, probably of the kidneys, and perhaps of other organs.

He was treated with full doses of opium combined with calomel, and relays of hot poultices to the entire abdomen.

I did not see the case again, but was informed by Dr. Hereford that nothing occurred to throw light upon the case. Urine dribbled away from him from time to time. His bowels were moved two or three times from the calomel. The distension of the abdomen increased, the pulse became more rapid and feeble, and he expired on the night of the 6th.

I made a *post-mortem examination* on the 7th, twelve hours after death. *Abdomen* much distended. Considerable ecchymosis in perineum, extending down the inside of the thighs; also on the back from the dorsal region down. No swelling of the soft parts anywhere except some fulness in perineum. The abdominal cavity was filled with an amber coloured fluid perfectly transparent and free from flocculi, probably from four to six gallons. The peritoneum healthy in all parts; neither redness nor patches of exudation marked any portion of it. At the symphysis pubis the bones were separated so as to receive closely my two fingers. There was a rugged rent in the collapsed bladder at the anterior part of the fundus about one inch in extent. Right kidney a good deal ecchymosed; left healthy. No counter fracture in any part of the pelvis.

The case is of unusual interest from the obscurity of the symptoms, the existence of fracture without anything to point to its seat (the patient having never complained of pain in the pubic region, but always referring it to the sacrum), the rupture of the bladder notwithstanding its having been emptied a few minutes previous to the accident, and the large accumulation of fluid in the cavity of the abdomen without any post-mortem signs of peritoneal inflammation.

The manner in which the injury was inflicted too is singular. We must suppose that the shock of the blow upon the sacrum was communicated to the point of the pelvis, causing fracture on the same principle as that at base of the skull called "fracture by centre coup," or else, more philosophically, perhaps, that in his position, half bent, the muscles of pelvis and lower extremities firmly fixed as in the use of the pickaxe, each half of the pelvis formed a lever of the first variety, thus, the hip-joints, forming a firm point of support, the fulcrum; the weight of the blow upon the sacrum, the power; the symphysis pubis the point of resistance; and by the powerful and sudden acting of this leverage the bones were wrenched asunder.

To account for so large a quantity of fluid in the abdominal cavity, without post-mortem signs of inflammation, we must suppose that, owing to the imperfect reaction, only a low form of inflammatory action was set up, just sufficient to cause serous effusion.

TRANSACTIONS OF SOCIETIES.

ART. XVI.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1867 June 13. *Autopsical Illustrations of some points in Cerebral Pathology.*—The following paper was communicated by Dr. GEORGE MARTIN, of Chester, Pa.:—

Sixty autopsies were made in the U. S. A. General Hospital at Chester, Pa., during the summer and fall of 1863; and in many of them important lesions within the cranium were found. The following fifteen cases were selected because their wounds were distant from the head, and those among them unwounded had been suffering from diseases that had no connection with the brain. Some apology may be due for thus noticing them, as they only assist in confirming what has already been often asserted, viz., the frequent production of inflammation of the serous membranes, and especially of the arachnoid, by an ichor-poisoned blood; but it is a subject of great importance, and one of which all may not be fully cognizant. There is no tissue of the body which suffers more frequently from inflammation than the serous, and oftentimes without the symptoms at all betraying it; and in the cases now brought to notice, but few of them presented any indication of the lesions taking place until a few hours before death, and in a number of them such a complication was entirely overlooked. Most of them were treated by other surgeons, and not seen by the reporter, until carried to the dead-house, and but few notes of their symptoms and treatment were even available. There was, however, one condition of the bodies noticed, which was very characteristic of their condition, viz., a drawing downwards and inwards of the toes and metatarsal bones, giving the feet a peculiar arched appearance. This symptom I have several times observed during life, in cases of spotted fever, and in one of the latter, where it was well marked, the patient recovered; but I have never seen it in the dead subject without finding arachnoid effusion.

CASE 9. *Partial Gunshot Fracture of the Femur.*—The body was in good condition, and the adipose tissue well developed. There were numerous recent pleuritic adhesions, but the lungs were healthy. The heart was large and soft. The spleen was very large. The femoral vein was full of pus, and its internal coat softened; there were several coagula in the ascending cava, and the medulla of the femur was inflamed; there was an effusion of serum into the ventricles and under the arachnoid, which was opaque and adherent.

CASE 13. *Gunshot Fracture of the Head of the Humerus, with Complete Destruction of the Articular Cartilages.*—There were small abscesses in both lungs, and part of the upper lobe of the right anteriorly was solidified. There were two ounces of serum in the pericardium, and fibrinous clots in both ventricles of the heart; that in the left extended along the

aorta for about twelve inches. The brain was congested, especially at its base, and there was effusion into the ventricles and arachnoid, with opacity of the latter.

CASE 14. *Gunshot Fracture of the Astragalus, comminuting the bone, which was bathed in pus.*—There was opacity of the arachnoid, with effusion under it, and into the ventricles of the brain. No other lesion was noted.

CASE 28. *Gunshot Fracture of the Head of the Fibula, and Partial of Head of Tibia, with a Dissecting Abscess of the Thigh and Leg.*—There were recent pleuritic adhesions on both sides of the chest, and an old and very firm one under the right nipple. There were adhesions of the arachnoid, with opacity and the effusion of serum.

CASE 41. *Gunshot Wound of the Upper Part of the Thigh, with Caries of the Femur, and a Dissecting Abscess.*—There were adhesions of the right pleura, and a large effusion into the ventricles of the brain, and into the arachnoid, which was opaque.

CASE 44. *Amputation of the Left Leg for a Gunshot Fracture.*—There was slight effusion into both pleuræ, and half an ounce of bloody serum in the pericardium. There was fatty degeneration of the heart, and softening of the muscular structure; the kidneys were pale and soft; the spleen was enlarged and softened, crepitating under the finger; the lining membranes of the arteries and veins were stained red, and the latter were full of gas; the substance of the brain was much softened; the ventricles contained bloody serum, and there was thickening and adhesions of the arachnoid, with effusion. This examination was made on the 17th of September, and though the period after death was not noted, it could not have been more than twenty-four hours, as the autopsies were made daily; therefore decomposition was remarkably rapid, and probably had commenced before life was extinct.

CASE 45. *Chronic Dysentery.*—The liver was apparently healthy, the spleen very small and hard, and the colon and rectum inflamed and ulcerated. There were numerous recent pleuritic adhesions on the right side, and a few on the left. The lower portion of the right lung contained an abscess, and calcareous granules as large as wheat grains were scattered over its anterior surface; there was subarachnoid effusion, with adhesions of its opposing surfaces.

CASE 46. *Amputation of the Right Leg through the Middle Third, for a Gunshot Wound.*—There was periostitis of the femur, extending four inches above the knee; also of the tibia, with complete destruction of its medulla. The knee-joint was full of pus, and the semilunar cartilages were softened. The right pleura contained a quantity of pus, and was adherent in some places. The right ventricle of the heart was thin, and its cavity full of light, greasy-looking coagula. The liver and kidneys were pale and soft. There was effusion into the ventricles of the brain, and also under the arachnoid, with numerous attachments of the latter.

CASE 47. *Partial Gunshot Fracture of the Tibia, near its Head.*—The bone was deprived of its periosteum for six inches of its upper end, and a large dissecting abscess extended from midway of the leg to the groin. The cavity of the knee-joint was opened, and the cartilages destroyed. There was effusion into the ventricles of the brain, and also under the arachnoid, with adhesions of the latter. The pleura was slightly adherent at the top of the left lung, and much more so on the right side; and in this cavity there was an abnormal quantity of serum, with shreds of

lymph floating in it. A large lobulated abscess was found in the right lobe of the liver, containing about twelve ounces of pus; the remainder of the organ was pale and soft.

CASE 49. *Gunshot Fracture of the Left Ilium, the ball having passed through the pelvis.*—The ring finger of the left hand had been amputated, and a palmar abscess had formed and completely destroyed the carpal and metacarpal articulations of the finger. The body was jaundiced; the liver was large, dark coloured, and softened; the spleen large and soft; the kidneys pale and soft. The cavities of the heart, and the connective tissues about the abdominal organs, contained gas; the right pleura contained eight ounces of fluid resembling pus; the left three ounces, and the pericardium two, of bloody serum. There was also subarachnoid effusion, with adhesions.

CASE 50.—*Gunshot Fracture of Left Ilium, with Destruction of the Hip-joint by an Abscess, which extended around to the pubis.*—The body was jaundiced; the liver very large and soft; the spleen much enlarged. The left pleura contained twelve ounces of pus; the ventricles of the brain were filled with serum, which was also effused beneath the arachnoid, and the latter was opaque and adherent in many places.

CASE 51. *Amputation at Knee-joint for a Gunshot Wound of Leg.*—There was general anasarca. The left pleura contained two quarts of serum; in the ventricles, and beneath the arachnoid, there was a considerable quantity; and there were adhesions of this membrane. No other lesions were noted at the examination; but as the dropsy was so considerable, it is not improbable that some were overlooked. The case is introduced because the arachnoid adhesions prove that inflammation of that membrane had existed.

CASE 52. *Chronic Dysentery.*—The mucous membrane of the stomach was red and thickened; the liver was large, and contained four abscesses from the size of a shellbark to that of a walnut with its hull. The kidneys were pale and soft; the colon and rectum ulcerated, the ulcers being half an inch in diameter. There were very numerous adhesions of the left pleura; the ventricles of the brain and the subarachnoid tissue contained an abnormal quantity of serum, and the membrane was adherent; the blood was fluid.

CASE 56. *Amputation of the Thigh, for a Gangrenous Stump of the Leg.*—The right pleura contained twenty-four ounces of a purulent looking fluid. The right lung was covered with soft lymph; its lower lobe was solidified, and contained numerous small abscesses; there was also an abscess in the posterior part of the left lung. The heart contained fibrinous clots in both ventricles; the liver was large, soft, and light-coloured in spots; the left kidney was very much enlarged, pale in colour, and contained small abscesses in its lower end; the right kidney was also pale; the femoral vein was inflamed, and contained firm, white coagula, and one was found in the left emulgent vein. There were adhesions and opacity of the arachnoid, with large effusion.

CASE 60. *Chronic Diarrhæa.*—There was a large, greasy looking, fibrinous coagulum, six inches in length, commencing in the left ventricle and extending into the aorta. There were six ounces of slightly opaque serum in the left pleura; the lung was adherent to the diaphragm and back of the thorax; the liver large, and fibrous under the knife, its surface mottled, and very dark in spots. The spleen was enlarged; the bowels agglutinated together by peritoneal attachments; the

descending colon a fourth of an inch thick, extensively ulcerated; the pia mater congested, the sinuses full of blood; the arachnoid opaque, with numerous adhesions, and serous effusion beneath it and into the ventricles. The body was much emaciated, and spotted with petechiæ.

Gastric Ulcer; Death from Exhaustion.—Dr. GEO. PEPPER exhibited the specimen, and said: J. D. R., æt. 52, white, American; married; father healthy; mother died of phthisis pulmonalis at the age of 53. Fifteen years ago he first began to suffer from dyspeptic symptoms. These consisted principally of a sensation of epigastric oppression and vomiting; this latter generally coming on one or two hours after eating. These symptoms were much benefited by attention to diet, yet never entirely disappeared. His general health, however, suffered comparatively little, and he was able to attend to his business, which was that of a plumber. During this time he emaciated rapidly, and presented the appearance of confirmed ill health. In 1863, in the call for the militia, he entered the service as captain of an infantry company, and was on duty about seven weeks, during which time he was much exposed to cold and wet. The change of food also affected him most unfavourably; the vomiting, which hitherto had been only occasional, now became almost constant, and on two occasions was accompanied by the ejection of considerable quantities of fluid resembling coffee-grounds. He also suffered from severe diarrhœa, which ceased, however, soon after his return home. His health never recovered from this severe shock; the vomiting persisted obstinately, and was accompanied by severe epigastric pain, which was paroxysmal in character, appearing with great regularity every night about twelve o'clock, and after having prevented sleep, by its intensity, for about two hours, would gradually subside. He commenced to fail rapidly, losing flesh, strength, and spirits. At this time he submitted to various empirical plans of treatment, but gained nothing by it—taking numerous patent remedies, and being cupped, blistered, packed in wet cloths, &c. He could now take no solid food, but lived entirely on milk and light animal broths. His bowels acted regularly, and the other functions were performed normally.

When first seen, Feb. 28th, '67, he was very weak and exceedingly emaciated; mind clear, spirits good; considerable desire for food, but any indulgence was surely followed by pain and vomiting. No cough, no hectic irritation; surface always harsh and dry; pulse frequent, small, and feeble; tongue clean, surface presenting a perfectly raw and stripped appearance; mucous membranes pale, and the whole aspect almost irresistibly suggesting the presence of carcinomatous disease. Bowels regular; passages normal; urine free—clear, red colour—sp. gr. 1018, acid; no albumen, no deposit. The vomiting, preceded by severe epigastric pain, now followed even the lightest food. The matters ejected were intensely acid, and contained sarcinæ ventriculi, torulæ cerevisiæ, vibriones, and altered food. Abdomen scaphoid; a slight enlargement could be felt in the epigastrium, which had slight pulsation communicated to it from the aorta. On placing the ear over this spot a distinct, single rough murmur could be heard; this could not be detected at any other point. The epigastric region appeared slightly tumid; pulsation occasionally visible; there was no sensitiveness on moderate pressure.

The vomiting was allayed by subnitrate of bismuth; the severe pain by belladonna, conium, and hyoseyamus. Any attempt to more than merely

palliate was followed by exacerbations in the symptoms. From the date when he was first seen to the date of death (May 20, '67), the downward progress of the case was slow, but continuous and apparent. He emaciated even more, became excessively weak, and for a few days prior to his death, which took place very quietly, he passed into a state of mild, wandering delirium, interrupted by periods of perfect lucidity.

Post-mortem.—Body well preserved; only the abdomen allowed to be examined; total absence of subcutaneous fat; liver large and healthy; kidneys healthy; spleen about normal size—rather soft and pale; intestines healthy. Stomach large; walls thickened, especially towards the pyloric extremity; it contained about f3ij of gastric mucus and altered food. This was principally collected at the pyloric extremity, where it was contained in a large cavity formed by a perforating ulcer of the stomach, which had contracted adhesions posteriorly with the body of the pancreas and the lower edge of the left lobe of the liver. The ulcer was situated on the postero-superior border of the stomach; was about $2\frac{1}{2}$ inches in its greatest diameter, which lay in the direction of the circumference of the stomach, and about $1\frac{1}{2}$ inch in the opposite direction. It bordered directly upon the pyloric orifice, which, however, it did not contract (the orifice being perfectly patulous and healthy). The wall of the stomach forming its borders was much thickened and indurated, but not discoloured. The base, which presented a yellowish-white surface, was firm and dense, and had sprouting from its surface two large, irregularly rounded nodules. The depth of the cavity was about one inch, when the stomach was held so as to allow the ulcer to be the most dependent portion. The adhesion of the walls to the base was very slight, and the slightest violence readily separated them. The thickness of the walls of the stomach, both in the vicinity and forming the walls of the ulcer, seemed to be due, in great part, to an increase of the muscular and fibrous coat—under the microscope presenting great increase in the muscular fibre-cells, and white fibrous and yellow elastic tissues. The floor of the ulcer, under the microscope, appeared to be formed of almost pure fibrous tissue. After cutting through this, a thick layer of a yellowish nodular substance was reached, which consisted of pure fat and a few fatty cells. The nodules were surrounded by a delicate fibrous stroma, and apparently consisted of the degenerate pancreatic structure. There was no evidence of any old peritoneal inflammation; the normal connection of the different organs in the vicinity, however, seemed to be unusually firm and dense.

Embolism of the Spleen and Kidney, from Fatty Softening of the Mitral Valve, probably following Endocarditis.—Dr. W. W. KEEN said the specimens were presented to him by Dr. McArthur, from the Soldiers' Home, but no previous history could be obtained.

Heart.—The edges of the tricuspid valves were slightly thickened, as were also its chordæ tendineæ. The pulmonary valves were healthy; the walls of the right heart normal. On the left side there was some hypertrophy, but not very marked. The aorta was atheromatous in quite large patches; the aortic valves were all three markedly thickened, especially at the edges, and vegetations were beginning on one, giving to it the rough appearance of sand-paper. All the chordæ tendineæ of the mitral valve of both leaflets were immensely thickened and shortened. Both leaflets were thickened throughout, and covered within and without

with vegetations, some as high as one-sixteenth of an inch. Both leaflets, but especially that next the septum ventriculorum, were eaten away by fatty degeneration, and one of the chordæ tendineæ was completely severed from the valve by the same process. By the microscope the fatty nature of the process was fully established, compound granular corpuscles, fat-cells and globules being almost the only elements seen.

The *spleen* was marked by one very large depressed spot, with puckered edges, and by several neighbouring smaller ones. There were, besides, a number of very dark patches, and the cicatrices already spoken of were surrounded by a dark margin. On section, all these discoloured regions were found to be irregularly pyramidal, the apices being directed centrally. The arteries were searched for, and partly traced; but there was great difficulty in tracing them on account of their depth. No embolia could be found so far as traced.

The *kidney* (which one is not positive) had also one large depressed and puckered yellow spot on the free border. It was $1\frac{1}{2}$ by 1 inch. On section it was pyramidal, the apex being central. Near it were three small spots of the same character. On tracing the renal artery, one large branch was directed to the diseased portion, and bifurcated just at its apex. One of its branches ran into the diseased pyramid at about one-third way from its lower border, and was completely occluded and solidified by an embolus. The other branch skirted for a little distance the upper edge of the diseased spot, and then plunged a little way into its substance. Just as it plunged in, an embolus a quarter of an inch long was seen, which had evidently occluded the artery. Soon, however, by softening at the centre, its resistance was diminished, and the blood bored its way through the centre, changing the solid clot into a cylinder, and washing the softened central parts further on. Further on, in fact, one of the small clots was found, and just beyond it a small cyst, as large as a pin's head, whose contents looked like pus, but which the microscope showed to be made up of granular corpuscles and fatty débris, no pus corpuscles being present. Here, too, were seen the small cicatrices on the external surface, caused, doubtless, by the fragments washed through the cylindrical clot before described; but none of them were actually observed. Examined by the microscope, the renal tubes were found lined with epithelium in all stages of fatty degeneration. Scarcely any other change was noticed, save the presence of a large number of compound granular corpuscles and oil globules.

Sept. 12. Rheumatism; Repeated Attacks of Malarial Disease; Cardiac Disease.—Dr. WM. PEPPER, in presenting the specimens for Dr. JAMES MARKOE, gave the following history: R. K., æt. 38, admitted to the Pennsylvania Hospital April 8, 1867; Irish; gardener; has resided for several years in Long Island, working steadily at his business. His parents and near relatives, so far as known, are free from any constitutional disease. He had, at quite an early age, a severe attack of acute articular rheumatism, but apparently without any cardiac complication. He has since then had frequent attacks of rheumatism, principally muscular; but has always been able to work, and, indeed, considered himself to have been a most robust man. He has also suffered for the past ten or twelve years, every spring and fall, with malarial fever, without any secondary lesions of either the liver or spleen being developed. Last August, after convalescing from some acute gastro-intestinal disturbance, he first noticed

dyspnœa upon exertion, and some little cough. By the latter part of the autumn he had œdema of the feet, some ascites, and suffered from dyspnœa almost constantly. In February, and the early part of March, 1867, he became better; but the alarming symptoms soon recurred, and on admission he had œdema of the feet, ascites, marked dyspnœa, and cough. The heart's action was very confused, rapid; and there was apparently a want of synchronous action of the various cavities. The heart-beats were more frequent than the radial pulse, which was also very irregular and intermittent. The impulse was extended and heaving; the area of cardiac dulness increased; a murmur existed, moderately harsh, presystolic, and heard most distinctly near the nipple, to the left of the sternum, about the third interspace.

The treatment consisted of various diuretics, saline laxatives, iron, digitalis, &c. He improved at first decidedly, but soon fell back into his former condition; and after a long and painful illness he died quietly at 6 P. M. on 10th September.

Post-mortem.—Body œdematous. *Thorax*—lungs œdematous; the *right lung* adherent; only a small amount of effusion in right pleural cavity. *Left lung* crepitant throughout, but congested posteriorly; the pleural sac contained about Ojss of clear serous effusion. *Heart* large, flabby, loaded with fatty deposit; muscular substance pale, soft, friable; under the microscope showing very faint striation and granular condition; aortic valves incompetent; mitral valves covered with soft, friable, pendent granulations: the cusps thickened and crippled; right side of the heart healthy; no fluid in the pericardium. *Liver* large, heavy; the upper surface of the organ presented a coriaceous appearance, and was putty-coloured; the thickened capsule easily separable; the tissue of the capsule consisted of fibre-cells, white and yellow fibrous tissue. Substance of the liver very dense; in a state of extreme nutmeg congestion; there was also a slight increase of fibrous tissue. The cells were, for the most part, natural in appearance; some, however, were somewhat granular and compressed. *Spleen* large and nodulated; its capsule opaque and thickened; yellowish in patches; the surface over patches depressed. On cutting into it, several large patches of homogeneous, yellowish tough substance were found; they were almost encapsuled, and presented no trace of central softening; there were also some smaller patches of the same character. On microscopic examination they were found to consist of merely the splenic elements undergoing atrophic fatty change. *Kidneys* quite large; slightly malformed; the cortical substance diminished, and tissue very dense and hard; whole organ presented a lurid, leaden hue. Capsule non-adherent; structure not unhealthy; the cells only slightly granular, the principal change consisting in a large deposit of reddish-brown pigment, and an excess of fibrous tissue. The other organs healthy.

ART. XVII.—*Proceedings of the Clinico-Pathological Society of Washington, D. C.*

1865. May 6. *Pseudo-Membranous Croup*.—Dr. H. P. MIDDLETON, reported the following case:—

Joseph Fronwald, aged fifteen and a half years, was admitted to the Episcopal Hospital, Philadelphia, March 20th, 1864, suffering with an ugly and peculiar looking ulceration of the upper lip and nose, with which he had been afflicted some eighteen months. The disease had extended up beyond the anterior nares, wholly including the nasal passages, destroying the cartilaginous septum, and rendering the boy a most pitiable object to behold. Respiration, of course, was carried on through the mouth, and the voice was decidedly husky—supposed to be due to the condition of things just related. I may here state that his general health appeared to be perfect. About two weeks after his admission to the hospital, he one morning complained of sore throat. I examined the throat and found an ulceration, similar to that upon the lip and nose, about the posterior nares, and a little to either side. The surface was raw and bossilated. The fauces were inflamed, and there was a feeling of heat and great soreness extending down the larynx, but no white or ash-coloured exudation could be seen. As might be expected, there was considerable febrile reaction. A saline cathartic, a cooling diaphoretic, the external application of lin. ammoniæ, with some restrictions in diet, constituted the treatment for this throat complication. In the course of three or four days the boy was relieved of everything except the ulceration, which continued to be as obstinate as that of the face.

On the 4th of May, about six weeks after admission, the patient again complained of sore throat, etc., which was again met by the same general plan of treatment as was previously adopted—tr. iodine being substituted for the ammon. liniment—but this time without relief.

On the following day the voice was more husky, but unattended by cough or expectoration. The dose of febrifuge was increased, and a steam bath ordered. On the evening of the same day the fever had greatly decreased, and the boy's condition seemed much improved, though he continued to complain of great soreness in the throat. Leeches were ordered but could not be obtained.

On the following morning the patient was worse, the fever had increased, and the general condition seemed to be pretty much as it had been two days previously. Some slight modification was made in the medicine that was being administered, and eight leeches applied to the anterior and sides of the neck. At 7 P. M. I was summoned hastily by the nurse, who said he thought Joseph was dying. On reaching the ward I found him gasping for breath; he would grasp the throat with his hand and pull at it as though to enlarge the opening for the admission of air. The voice had degenerated to a mere whisper; respiration similar to that of a person labouring under a severe attack of asthma. I desired him to cough, but he declined—but finally complied with the request—and, in doing so, revealed the character of the trouble by the croupy sound. I at once called in the other medical gentlemen of the hospital, and the diagnosis being confirmed, we immediately commenced to administer

powdered alum in teaspoonful doses at short intervals, which failed, however, to produce emesis or even nausea, although ℥jss was taken. ℥j of sul. zinc and ℥ss ipecac were then given, and in a short time free vomiting followed, but not a particle of false membrane was ejected. During the time consumed in the administration of emetics, symptoms of exhaustion had supervened, and the prostration was now extreme. The lips, portions of the face, ends of the fingers had become permanently livid; the pulse was imperceptible at the wrist, and a cold, clammy sweat bedewed the whole surface. Stimulants were freely administered, but all to no purpose. The pitiable sufferer, after repeated convulsive efforts, sprang from his bed, and fell upon the floor *a corpse*—dying literally from “*want of breath.*”

An *autopsy* was made eighteen hours after death, and the specimen, which is herewith presented to the Society, obtained. (The specimen consisted of larynx and a portion of the trachea, so slit open as to show the interior, which was almost entirely closed by a coating of false membrane.)

There are two or three points connected with this case which I wish to bring to the attention of the Society.

First. The *age* of the patient; as before stated, he was fifteen and a half years old. Now, although this is not unprecedented, it certainly is unusual, the disease being one almost exclusively confined to childhood. Meigs does not report a case occurring after the seventh year; Watson, in referring to ninety-one cases reported by Jurin, states that only *one case* occurred after the tenth year. Dickson says that it is very seldom seen in children before they are weaned, or after the age of puberty, although he reports one case of a lady fifty years of age, who was subject to it all her life.

Secondly. I would call attention to the rapidity with which the disease progressed, or, at least, manifested itself, during the last ten or twelve hours of the boy's existence.

May 20. Traumatic Tetanus.—Dr. J. FORD THOMPSON reported the following case:—

Steward B. P. Blewitt, 24th Regiment Veteran Reserve Corps, age thirty; of rather delicate constitution, but enjoying tolerably good health. May 8th, 9 P. M., in turning over the seat of a wagon, received a small punctured wound, from a nail, in the palm of the right hand immediately over the metacarpo-phalangeal articulation. The wound bled quite freely, but ceased in a short time, when he applied a compress wet with water and tr. opii to relieve the pain, which he said was quite severe. By 11 P. M. the pain had much increased, extending up the forearm, and there was also contraction of the digital muscles. Becoming very uneasy with that feeling of impending evil, so characteristic of this disease, the surgeon in charge, Dr. Frisbie, was summoned, and prescribed the local application of warm fomentations with laudanum and camphor, and a dose of opium internally.

May 9, 2 A. M. The treatment has afforded no relief, and the spasms have extended up the arm, with well-marked trismus and great difficulty in deglutition. Dr. Frisbie again saw him, and administered tr. opii, spts. æth. comp., aa gtt. xl., remaining with the patient during the remainder of the night, giving him twenty-five drop doses of laudanum every half hour, until 7 A. M., when he fell asleep and slept until 9 A. M.

Saw him in consultation with Dr. Frisbie at 8.15 A. M., when he was sleeping soundly, with a good pulse, no spasmodic contractions, and the muscles of the jaws perfectly relaxed.

A few minutes after 9 A. M. the patient awoke, and was soon seized with the same symptoms, with an extension of the spasms to the muscles of the back of the neck and of the back; though there was no opisthotonos, the contractions not being tonic in character. At 10.30 A. M. the inhalation of chloroform was commenced, and he was kept partially under its influence until 5 P. M. This treatment greatly diminished the frequency and force of the muscular spasms, but it was found that he was growing much weaker, and therefore the use of the chloroform was suspended. He was then put upon opium and whiskey, but continued to fail, dying May 10, 1 A. M., twenty-eight hours after the receipt of the injury.

In his summary of this case Dr. Thompson referred to the assertion made by Erichsen in his work on surgery, who says: "*Wherever the wound may be situated the first symptoms are observed in the portio-dura of the seventh pair of nerves,*" and cited a case which had occurred during his army practice, which would tend to disprove such assertion; the case being that of a soldier who had had his leg amputated at the point of election, and in which the spine of the tibia had ulcerated through the anterior flap; in this case the spasms of the muscles of the thigh preceded several days any evidence whatever of an affection of the portio-dura.

In speaking of the treatment, he referred to two cases treated by Dr. W. V. B. Bogan, of this city; in the first of which the patient recovered, the treatment being mainly injections of sulphuric ether. In the second case (the patient being a lady in whom the disease supervened seven or eight days after an abortion had taken place) the same treatment was pursued, but death resulted. He also referred to a case treated at the Armory Square Hospital, in which tetanus ensued after a severe lacerated wound of the buttocks; this case recovered, being treated by the applications of ice over the spinal column, and the local application of morph. sulph. to the wound.

In the discussion which ensued after the reading of the paper, Dr. Middleton mentioned a case which occurred at Blockley Hospital, Philadelphia, under his notice, in which tetanus ensued as the result of an injury to the ulnar nerve; the nerve was divided and the patient recovered.

May 27. Compound Fracture of Ulna; Resection of Elbow-Joint.—Dr. S. J. Todd reported the following case:—

C. S., mulatto, thirty-five years of age, tall, robust, and of good general health, came under my care July 21st, 1864. He had received a wound on the anterior aspect of the left forearm, one inch from the joint, and extending towards the hand a distance of three inches. The wound was caused by a blow inflicted by a spade in a street fight; his arm, at the moment of the accident, being in a semi-flexed position, protecting his head, to which the blow was directed. The edges of the wound were rough, and venous hemorrhage profuse. Passing my finger into the wound, I found there was a comminuted fracture of the ulna, two inches from the extremity of the olecranon process, and involving three or four inches of the shaft of the bone. The following day, in the presence and with the assistance of Drs. Dove, Lincoln, and Wordsworth, resection of

the joint was performed. The wound having been enlarged, and the olecranon dissected out, the end of the bone was then sawn off, and all spicula and clots removed. The wound was filled with lint, the limb placed in a semi-flexed position, and cold water-dressing applied until the 30th, when a deeply-seated abscess was detected two inches above, and extending towards the joint, but not communicating with it. This was opened. The patient then slowly improved; the wound looked healthy, pus landable, appetite good, and there was but little pain in the arm, until the 26th of August, when two more abscesses, situated on the anterior aspect of the arm, were discovered and opened. About this time he was admitted to the Quartermaster's Hospital, in charge of Dr. Lincoln, where I continued to attend him. I may here remark that his diet throughout his sickness had been good and nutritious. He had also been taking the muriated tincture of iron. On the 13th of September the wound and the abscess previously opened, suddenly ceased to discharge. In a few days he complained of pain in the lumbar region, loss of sleep and of appetite; his pulse rose to 110; urine scanty and highly coloured. On the 11th of September anasarca was noticed. His urine was tested by heat and nitric acid, and some little albumen detected. Powders of uva ursi and bicarb. soda were ordered him. On the 1st of October he was discharged, his wound being in a healthy condition and all symptoms of renal disease having disappeared. On the 10th of October I was again called to see him, and found the same condition of things as in the former attack, except that the dropsy was more general, respiration being impeded by the abdominal distension. I again tested his urine, and found it loaded with albumen. Wine of colchicum and bitartrate of potash were given, and $\frac{1}{16}$ gr. of elaterium twice a day. On the 15th of October I opened another abscess, which had formed on the inner side of the forearm; it discharged freely, and from this time he improved rapidly.

The limb is now partially ankylosed in a semi-flexed position, being still of some use to the patient.

The first and most prominent question that suggests itself in connection with this case, is this: Was the subacute inflammation of the kidneys, with the symptoms of general dropsy following it, dependent upon the cessation of the discharge of pus? Or, was it simply incidental—a coincidence—and not an effect?

(Oct. 1st, 1867. Dr. Todd wishes to add to the above report that he has at this date had an opportunity of examining the elbow of the patient, and that he now has free motion both of the elbow-joint proper and of the humeral end of radius, in pronation and supination. In the language of the patient—"that arm is as good as its fellow.")

November 25. Operation for the Radical Cure of Hernia.—Dr. PRENTISS reported the following case:—

Daniel King (col.), a stout mulatto, aged about 25 years, apparently of good constitution, was admitted to Quartermaster's Hospital, July 12, 1863, with pneumonia—from which disease he speedily recovered.

During the treatment for this affection, a reducible inguinal hernia of the left side was discovered; the tumour was about the size of an egg, and did not extend into the scrotum. Upon this hernia, the patient consented to have the operation for radical cure performed. The operation was performed July 22d by the surgeon in charge of hospital—in the

following manner: An incision was made downwards in the course of the spermatic cord about two inches in length, commencing two inches above the external abdominal ring, and the tissues laid back until the sac was exposed. The hernia was then reduced, and a curved needle with a handle, threaded double near the point, was passed in by the incision, through the columns of the ring, and brought out through the skin of the abdomen, where one thread was left. The needle was then carried back, and passed again through the columns of the ring at a different place, care being taken not to pinch the spermatic cord—and again brought out at the same point, where the other thread was detached and the needle withdrawn. These two threads were next tied together over a smooth wooden block provided for the purpose, thus drawing together the external ring like the strings of a bag. The wound was sutured with fine iron wire, compress and bandage applied, morphia administered, and the patient left. Chloroform was the anæsthetic employed.

For two or three days after the operation, there was great pain in the part, until suppuration was freely established, when the threads becoming loose were taken away; the sutures were also removed, and the wound enlarged to promote the free escape of pus. Intense tenderness over the abdomen, with tympanitis, was developed, and treated by emollient poultices and full doses of morphia to relieve pain. A distressing cough harassed the patient from the beginning, rendering the prognosis unfavourable from the constant strain upon the external ring. Slight hemorrhage occurred several times from the new incisions.

On the 6th day after operation, pyæmia set in with its usual phenomena—severe chills, anxious countenance, icterode appearance, etc., and in addition great pain over region of the liver. These symptoms continued to increase until the night of August 1, when a severer hemorrhage than any previous, occurred, which terminated the patient's life, eleven days after the operation.

There was no autopsy, but the evidence first of peritonitis and secondly of pyæmia, was undoubted; and had not the patient died of hemorrhage (which was probably from the spermatic artery), he must have shortly succumbed to the constitutional disease.

December 9. Gunshot Wounds of the Bladder.—Dr. ROBBINS reported the following two cases:—

CASE I. Private Sherman E. Perry, Co. B, 16th New York Volunteers. Age twenty-seven; wounded at battle of Salem Church near Fredericksburgh, Va., late in the afternoon of May 3d, 1863. While leaning forward in the act of stooping down, he was struck by a conical ball, which, after passing through his canteen and clothing, entered his body on the right side, half way between the anterior and superior spinous processes of the ilium, and the symphysis pubis, and two inches below a line drawn from one anterior superior spinous process of the ilium to the other. The ball passing downwards and backwards, and a little to the right, lodged midway between the sacro-coccygeal articulation and the great trochanter of the right femur. When struck he fell, but soon got up, and walked to a house about forty rods to the rear. Four days following the ball was extracted, at the point mentioned as its having lodged, by a surgeon of the 121st New York Volunteers, who attended him nine days, when he was conveyed to the Potomac Creek Hospital, and came under the care of Surgeon Oakly, of the 6th Army Corps. No

urine was passed through the urethra for eight days, but blood and urine passed freely through the wounds. On the ninth day a catheter was passed, and kept constantly in the bladder. On the 13th day of June he was transferred to the U. S. General Hospital, Armory Square, Washington, D. C. The wound where the ball was extracted was completely healed—the one made by the entrance of it, nearly so. The catheter was withdrawn four days after his admission into Armory Square, and following its withdrawal he passed, per urethra, a piece of blue cloth, beautifully incrustated with calcareous deposit. Quite a large calculus passed during the night of 20th, accompanied with intense pain. Symptoms of stone being present, the lateral operation of lithotomy was performed on the 9th day of September, by Dr. D. W. Bliss, the surgeon in charge of the hospital, and a soft calculus, weighing twenty-three grains, was extracted; the nucleus being a piece of cloth. The patient bore the operation well, and returned home the following month, apparently perfectly well. Information was obtained from him during the following year, when he was suffering no inconvenience from his wound.

CASE II. John Mahay, Co. A, 101st New York Volunteers. Wounded at battle of Bull Run, August 29, 1862. Conical ball entering upon the crest of the pubis, an inch to the right of the symphysis, passed through it and through the bladder in a downward and outward course, and made its exit between the spine of the ischium and the coccyx. Several pieces of bone passed through the urethra, during the first few months after his entrance into the hospital. The wounds made by the entrance and exit of the ball would close up for a longer or shorter period of time, and would again open and discharge urine, pus, and blood, and when urinating, that fluid would pass as freely through these fistulous openings as through the urethra. He generally urinated freely, but never without pain, referring it to the penis and perineum. The urine was always albuminous and muco-purulent, sometimes mixed with blood. A catheter was retained in the bladder during the earlier part of the treatment, but was discontinued on account of the great pain it produced. This patient was under the care at various times of quite a number of surgeons. When Dr. T. E. Stuart took charge of the case, about nine months after the patient's admission into the hospital, he dilated the wound made by the entrance of the ball, and extracted quite a large irregular shaped piece of bone—at the same time he introduced his finger through the opening, and felt a stone in the bladder. The patient's condition was such that it was not deemed prudent to operate for its removal. I do not know the precise day of the patient's death, but am convinced that he was an inmate of the hospital for a year and a half or more. He finally died from exhaustion. The bladder was found to be very much contracted, and three-eighths of an inch in thickness; its cavity was nearly filled by two calculi, one weighing two drachms and ten grains, and the other four drachms.

1866. Jan. 20. *Abscess of Liver*.—Dr. YOUNG reported the following case, which occurred while he was acting House Physician in Bellevue Hospital:—

P. R., Irishman, æt. 35; hackman; intemperate; admitted June 2, 1864. Came under my care July 1. He was then extremely emaciated; his abdomen and lower part of thorax very much enlarged. Right leg very œdematous. The liver extending below the umbilicus, and considerably to the left of median line. Some effusion within the peritoneal

sac. The bowels being flatulent and thereby increasing the permanent embarrassment to respiration, aromatics were administered with good effect, and, subsequently, small doses of podophyllin every four hours until the bowels were freely acted upon and the œdema of leg had disappeared. He was now enabled to move slowly about the ward.

July 10. At a point between the eighth and ninth ribs, and to the right of the median line eight inches, he had for several days experienced pain, but there was no redness present, but as fluctuation was discovered hepatic abscess was diagnosed.

22d. Dr. Loomis, the visiting physician, by using an exploring needle at that point discovered pus, whereupon he made a small incision with a scalpel, and the pus gushed forth in a steady stream until five and a half quarts were collected. The patient bore the operation well, and expressed himself as greatly relieved. The breathing became easy; pulse feeble, 112. A binder was placed around the body and a siphon of tow put in the opening. He was given eggnog and beef-tea during the evening.

23d. Appetite enormous. He was ordered, in addition to the regular diet, two pounds beef steak, two pounds mutton chops, nine eggs, two quarts milk, and twelve ounces of whiskey, all of which he consumed and called for more. In two or three days he was able to sit up on the side of the bed.

27th. Commenced sweating profusely; took very little nourishment; two grains of quinia with a few drops of aromatic sulphuric acid were given every three hours.

On the 29th the sweating had stopped, and his appetite was regained; he put on his clothes, walked to the portico, and there sat for two hours smoking his pipe. From the time of the operation the abscess was syringed out every day by means of a stomach-pump.

About the 15th of August maggots appeared in the matter washed out, but these were destroyed by creasote in a short time. He continued to improve until October 28, when I left the hospital. He had gained more than forty pounds, and was feeling so well that he was making preparations to leave for home in a few days. At that time the abscess was *discharging* about two ounces of healthy pus daily. Dr. A. Flint, in his recent work on practice, has referred to this case. (p. 465.)

March 24. Idiopathic Endocarditis.—Dr. ROBERTS reported the following case:—

A. H., twenty-one years of age, a soldier, had been under my observation about three weeks, with a gunshot flesh wound of the calf of the leg, which had nearly healed, when he was attacked with a chill, followed by high febrile excitement. I saw the patient during the fever, but passed him by, prescribing a simple diaphoretic, supposing it to be a case of ordinary intermittent fever, then quite prevalent in this locality. I found the next morning the fever, instead of having subsided, had increased; the pulse was 120, full, hard, and regular; the face flushed; tongue dry and coated; and the man complained of a dull, burning pain in the region of the heart. I auscultated the organs situated in the chest, but could find no trouble there beyond the excessive action of the heart. I directed my measures to reducing the inflammatory excitement, and gave to that end hyd. chlor. mit. and pulv. jalap grains v each, adding antim. et potass tart. gr. $\frac{1}{2}$ to each dose of the diaphoretic mixture. Upon making my evening visit the general condition of the patient was unchanged; he had a copious evacuation of the bowels. The next morning I found a

great change had taken place during the night; the face was no longer flushed, but pale, and covered with a cold perspiration; pulse 140, and very irregular; breathing quick and laboured. Upon auscultation I discovered murmurs at the apex, over the body, and at the base of the heart, and coexistent with the first sound; the murmur was also transmitted up the carotids; the heart was not enlarged, the apex could be distinctly seen beating in its normal position. I now considered that I had a well-marked case of acute endocarditis to deal with, not having been preceded as is almost invariably the rule, by acute rheumatism. The patient said he had never had rheumatism, and there certainly was no evidence of the joints being affected at this time. I ordered *tr. verat. viride*, *gtt. iij* every hour; this was afterwards increased to five every hour, the effects being closely watched; the old fashioned prescription of *hyd. chlor. mit.*, *opii* and *ipecac* was also given. When the patient had been under this treatment ten or twelve hours, his condition was much improved; the heart's action was less violent; the breathing much easier; the pulse had diminished twenty beats per minute; the patient altogether more quiet and comfortable. This treatment was persisted in four days, the doses being increased or diminished as the symptoms seemed to require, the patient gradually improving, with every prospect of recovery; the heart murmurs, however, increased in intensity, and remained very loud after convalescence. On the twentieth day of the disease the patient was enabled to leave his bed. From this time he took slight exercise each day, and was discharged the service some two months subsequently with hypertrophy and valvular disease of the heart. No enlargement was observed until several days after the discovery of the valvular trouble. The murmurs were unusually loud, being heard over the whole of the chest with the first sound of the heart, evidently the combined aortic direct and mitral regurgitant.

March 31. Amputation of the Thigh followed by the Formation of a Large Sequestrum.—Dr. J. FORD THOMPSON reported the following case:—

Albert Paris, aged 24 years, admitted into Providence Hospital, Dec. 22, 1865, with wound of right knee-joint from a pistol-ball injury received on the night of December 14. Ball entered at the external aspect of joint, between the patella and external condyle of the femur, opened the joint and lodged. Upon probing the wound a small piece of the condyle was found chipped off, but the ball could not be found (this examination being made on the eighth day after the receipt of the injury; previous to his entrance into the hospital he had been treated with purgatives and cold lotions locally applied). Limb very much swollen both above and below the joint; the joint itself being distended with synovia and pus, a little of the latter was oozing from the wound. Patient with high inflammatory fever; restless and sleepless, with a quick pulse. Was of a good constitution, having up to this time enjoyed excellent health. After a consultation with Drs. Lincoln and Ford, and with the consent of the patient, it was decided to amputate the limb, but first a long incision was made into the joint partly for the purpose of ascertaining the point at which the ball had lodged and to see the condition of the joint; a large quantity of synovia mixed with pus escaped, which had been pent up on account of the small valvular opening made by the ball not being sufficiently free to admit of its exit. Synovial membrane intensely inflamed and softened, but there was no injury to the bone except the pieces chipped off from the external condyle as already noticed; the ball, however, was not found.

Amputation was then performed by the conical circular operation at the junction of the lower and middle third of the thigh; chloroform was administered and four ligatures applied. Hemorrhage slight and patient rallied in a short time from the effects of the chloroform and operation, feeling quite comfortable. Wound closed transversely by wire sutures and supported by a bandage.

On third day stump was dressed, union having taken place over a considerable portion; at that time, and during the interval since the operation, the patient's condition was good with the exception of a very quick pulse.

After the sixth day no dressing was used, and on the twelfth day the ligatures were taken away, the flaps having united except in the middle where a suture had been removed on the third day to allow of the exit of pus; in a few days this had filled up, leaving a small sinus from which there was a slight discharge. During this time the quick pulse continued with an irritative fever. One month after the date of admission, being anxious to leave the hospital, and the wound having healed with the exception of the small sinus mentioned (which was supposed to be due to the presence of a ring of exfoliated bone), he was allowed to return home.

Several days after the patient left the hospital he sent for Dr. Thompson, who found him suffering from a very high fever, with the limb swollen, hot and shiny in appearance. He diagnosticated the presence of an abscess as the result of diseased bone. Ordered fever mixture and applied hot fomentations to the stump. On the next day patient's condition very much improved, there having been a large discharge of offensive matters from the sinus during the night. On introducing a probe into the sinus diseased bone was felt, which, however, was quite firm and not entirely detached.

March 1, 1866. Considering sufficient time had elapsed to allow of the detachment of the diseased bone, although it appeared to be quite firm to the touch of the probe, an incision was made upon either side of the sinuss sufficient to uncover the end of the bone, and, on the application of necrosis forceps, steady traction was made in the line of axis of the bone, and with the exercise of no great force the sequestrum was removed. The sequestrum was six inches in length, extending, doubtless, up to the base of the trochanters, having the size and shape of the femur; quite firm, honeycombed in appearance, and having new bone in considerable quantity thrown out all around it. A large quantity of fetid pus was discharged at the time of the removal of the bone, and some hemorrhage ensued, but, on the application of a sponge compress for a couple of hours, the latter was checked. On the next day, the fever and swelling of the stump having very much subsided, the patient expressed himself as much relieved and more comfortable than he had been since the amputation. The cavity left by the extraction of the bone has filled up, and the stump is apparently as firm as ever.

After the amputation had been performed the knee-joint was carefully dissected out, and a small, round pistol-ball found imbedded in the tissue of the ligamentum patellæ.

Dr. Thompson, in commenting on the case, referred to the means employed by surgeons in order to prevent the exfoliation of bone after amputations, and stated that in this case he had been careful to dissect back the periosteum sufficiently to entirely cover the cut end of the bone, but he thought that at the time of the operation the periosteum with its surrounding tissues was already inflamed.

REVIEWS.

ART. XVIII.—*The Physiology of Man; designed to Represent the Existing State of Physiological Science, as Applied to the Functions of the Human Body.* By AUSTIN FLINT, Jr., M.D., Professor of Physiology and Microscopy in the Bellevue Hospital Medical College, New York, and in the Long Island College Hospital, etc. etc. Alimentation; Digestion; Absorption; Lymph and Chyle. 8vo. pp. 556. New York: D. Appleton & Co., 1867.

OUR readers will remember that in a former issue of this Journal we presented them with a brief analysis of the first volume of this excellent treatise on Human Physiology. Dr. Flint designs to complete his work in four volumes. The second of the series has just been published, and is now before us. It treats of the great function of Nutrition under the several heads of Alimentation, Digestion, Absorption, the Lymph and Chyle. Upon these topics the author bestows the same judicious care and labour which so eminently characterize the first volume. Facts are selected with discrimination, theories critically examined, and conclusions enunciated with commendable clearness and precision.

The first four chapters, constituting about one-fourth of the volume, are devoted to the consideration of alimentation. In most of the standard works on Physiology this subject fails to receive the attention which its great importance deserves. Our author, however, availing himself freely of the labours of Chossat, Collard de Martigny, Magendie, De Meersman, Pereira, Blondlot, Payen, Boussingault, Hammond, Jones, and others, has usefully devoted quite a large space to the discussion of this subject. After making some remarks upon the nature and location of the sensations of hunger and thirst, he proceeds to exhibit, at considerable length, the effects produced upon the circulatory, respiratory, and nervous functions, and upon the temperature of the body, by inanition and insufficient alimentation. When we consider that all disease originates either directly or indirectly in faulty general or local nutrition, it is evident that an intimate knowledge of the phenomena of starvation is of the greatest importance, not only to the student of physiology, but to the general practitioner also. It is therefore with great propriety that our author dwells so minutely upon those phenomena which have nowhere, perhaps, been exhibited with such frightful intensity as in our own country during the recent civil war. We do not hesitate to transfer to our pages the following deeply interesting account of some of the results of starvation, as they occurred upon our own soil, in 1864:—

“The effects of insufficient alimentation in man have often been observed in times of famine; the sad details of which have been given in graphic accounts by various European writers. The history of our own country during the late civil war affords an example, the most appalling on record in any country and in any age, of the sufferings of thirty thousand men exposed within an area of twenty-seven acres to the effects of insufficient diet, conjoined with exposure, without protection, to the vicissitudes of the weather, and the frightful filth and other inevitable results of such excessive crowding.

"In a report by Prof. Ellerslie Wallace, of Philadelphia, to Prof. Valentine Mott, the chairman of a committee appointed by the United States Sanitary Commission to inquire into the condition of United States officers and soldiers, prisoners of war, the following is given as the average diet in Southern prisons:—

"The meat was irregularly given; not often daily, and to some only at intervals of days, or even several weeks, and when meat was served, the bread was, in many instances, diminished. About half a pint of soup, containing sweet potatoes, or generally beans or peas, in amount about two ounces, was sometimes given, with or without meat in different cases. The beans and peas were occasionally given raw and dry.

"The maximum amount of solid food for one day, described, was 10 oz. bread.
6 oz. beef.

"With half a pint of soup made of the water in which the beef was boiled, and containing about two ounces of beans or peas, and therefore representing 2 oz.

"Total 18 oz.

"The minimum amount was about 4 oz. bread.
1 oz. beef.

"Total 5 oz.¹

"Assuming the amount of solid food required to keep the system of an adult male in proper condition to be from thirty to forty ounces, it is seen that even the maximum amount above given is so far insufficient for the purposes of nutrition, that death from inanition must result, sooner or later, in the majority of instances. This is assuming that the food be of proper quality; while the testimony taken by the commission showed that the quality was always inferior, generally disgusting, and that no variety of diet was afforded.

"The effects of insufficient food upon the power of resisting cold was one of the most marked phenomena. Even in the mild climate of the South, frost-bite and gangrene of the extremities were very frequent. These occasional results, taken in connection with the extreme emaciation, the peculiar mental condition, etc., which go to make up the general aspect of inanition, presented a picture more distressing than can well be imagined. The description by De Meersman of the famine in Belgium in 1846 and '47, though it may seem highly coloured, must, judging from the experience in this country, even fall short of the reality.² * * *

"Through the kindness of Prof. W. H. Van Buren, of the United States Sanitary Commission, we have been enabled to make use of a MS. report to the Richmond authorities (now the property of the Commission) on the condition of United States soldiers, prisoners of war at Andersonville, by Prof. Joseph Jones, of Augusta, Georgia.³

¹ Narration of Privations and Sufferings of United States Officers and Soldiers while Prisoners of War in the hands of the Rebel Authorities. Being the Report of a Commission of Inquiry, appointed by the United States Sanitary Commission. With an appendix containing the Testimony. Philadelphia, 1864, p. 111.

The commission consisted of Valentine Mott, M. D., LL.D., Edward Delafield, M. D., Gouverneur Morris Wilkins, Esq., Ellerslie Wallace, M. D., Hon. J. I. Clark Hare, and Rev. Treadwell Walden. The statement quoted from the report of Dr. Wallace was corroborated by the sworn testimony of numerous officers and men who had been prisoners of war, and the facts were admitted by many of the public authorities directly or indirectly in charge of the prisoners, so that there can be no doubt of their general accuracy.

² Dr. Wallace (loc. cit.) alludes to the description of De Meersman as giving a "singularly accurate description" of the condition of exchanged United States soldiers.

³ Investigations upon the Diseases of the Federal Prisoners confined in Camp Sumpter, Andersonville, Ga., instituted with a view to illustrate chiefly the Origin

"The following extract from an official report by Dr. Jones, dated October 19, 1864, gives an idea of the sanitary condition under which the prisoners were placed:—

"Immediately after the brief report upon hospital gangrene had been forwarded to the surgeon-general, I repaired to Camp Sumpter, Andersonville, Georgia, and instituted a series of investigations upon the diseases of the Federal prisoners. The field was of great extent and of extraordinary interest. There were more than five thousand (5000) seriously sick in the hospital and stockade, and the deaths ranged from ninety to one hundred and thirty each day. Since the establishment of this prison, on the 24th of February, 1864, to the present time, over ten thousand Federal prisoners have died: that is, near one-third of the entire number have perished in less than seven months. I instituted careful investigations into the condition of the sick and well, and performed numerous post-mortem examinations, and executed drawings of the diseased structures. The medical topography of Andersonville and the surrounding country was examined, and the waters of the streams, springs, and wells around and within the stockade and hospital carefully analyzed.

"Diarrhœa, dysentery, scurvy, and hospital gangrene were the diseases which have been the main causes of the extraordinary mortality. The origin and causes of the hospital gangrene which prevailed to so remarkable a degree, and with such fatal effects amongst the Federal prisoners, engaged my most serious and earnest consideration. More than *thirty thousand* men crowded upon *twenty-seven* acres of land, with little or no shelter from the intense heat of a Southern summer, or from the rain and dew, with coarse corn-bread from which the husk had not been removed, with scant supplies of fresh meat and vegetables, with little or no attention to hygiene, with festering masses of filth at the very doors of their rude dens and huts, with the greater portion of the banks of the stream flowing through the stockade a filthy quagmire of human excrements alive with working maggots—generating by their own filthy exhalations and excretions an atmosphere that so deteriorated and contaminated their solids and fluids, that the slightest scratch of the surface, even the bites of small insects were frequently followed by such rapid and extensive gangrene as to destroy extremities and even life itself. A large number of operations have been performed in the hospital on account of gangrene following slight injuries and mere abrasions of the surface. In almost every case of amputation for gangrene, the disease returned, and a large proportion of the cases have terminated fatally. I recorded careful observations upon the origin and progress of these cases of gangrene, and examined the bodies after death, and noted the pathological changes of the organs and tissues. All these observations, together with the drawings, will be forwarded to the surgeon-general, at the earliest possible moment."

"In vol. i. p. 213, Dr. Jones gives the ration of the prisoners. This was probably the regular ration, which was undoubtedly lessened at times, for the evidence taken by the committee appointed to investigate the condition of exchanged prisoners shows that the average was much less.²

"5th. *Diet*.—The ration consists of one-third pound of bacon, one and one-quarter pounds of meal. The meal is unbolted, and when baked, the bread is coarse and irritating, producing diseases of the organs of the digestive system (diarrhœa and dysentery). The absence of vegetable diet has produced scurvy to an alarming extent, especially among the old prisoners."

"The following extracts show the effects of this insufficient diet upon the constitution of the blood, upon the appetite, and, what is most mournfully interesting, upon the intellectual faculties:—

"5th. *From the sameness of the food and from the action of the poisonous*

and Causes of Hospital Gangrene, the Relations of Continued and Malarial Fevers, and the Pathology of Camp Diarrhœa and Dysentery. By Joseph Jones, M. D., Professor of Medical Chemistry in the Medical College of Georgia, at Augusta, and formerly Surgeon in the Provisional Army of the Confederate States; in three volumes. Manuscript. Augusta, Ga., 1865-66.

¹ Report, vol. i., Preface, pp. 12, 13.

² See above.

gases in the densely crowded and filthy stockade and hospital, the blood was altered in its constitution, even before the manifestation of actual disease.

“‘In both the well and the sick, the red corpuscles were diminished; and in all diseases uncomplicated with inflammation, the fibrinous element was deficient. In cases of ulceration of the mucous membrane of the intestinal canal, the fibrinous element of the blood appeared to be increased, whilst in simple diarrhœa, uncomplicated with ulceration, and dependent upon the character of the food, and the existence of scurvy, it was either diminished or remained stationary. Heart-clots were very common, if not universally present, in the cases of ulceration of the intestinal mucous membrane, whilst in the uncomplicated cases of diarrhœa and scurvy, the blood was fluid and did not coagulate readily; and the heart-clots and fibrinous concretions were almost universally absent.

“‘From the watery condition of the blood, there resulted various serous effusions, into the pericardium, into the ventricles of the brain, and into the abdominal cavity. In almost all the cases which I examined after death, even in the most emaciated, there was more or less serous effusion into the abdominal cavity. * * *—(Vol. iii. p. 150.)

“‘6th. *The impoverished condition of the blood, which led to effusions within the ventricles of the brain, and around the brain and spinal cord, and into the pericardial and abdominal cavities, was gradually induced by the action of several causes, but chiefly by the character of the food.*

“‘The Federal prisoners, as a general rule, had been reared upon wheat bread and Irish potatoes; and the Indian corn, so extensively used at the South, was almost unknown to them as an article of diet, previous to their capture. Owing to the impossibility of obtaining the necessary sieves in the Confederacy, for the separation of the husk from the corn-meal, the rations of the Confederate soldiers as well as of the Federal prisoners consisted of unbolted corn-flour, and meal, and grist; this circumstance rendered the corn bread still more disagreeable and distasteful to the Federal prisoners. Whilst Indian meal, even when prepared with the husk, is one of the most wholesome and nutritious forms of food, as has been clearly shown by the health and rapid increase of the Southern population, and especially of the negroes, previous to the present war, and by the strength, endurance, and activity of the Confederate soldiers, who were throughout the war confined, to a great extent, to unbolted corn-meal; it is nevertheless true, that those who have not been reared upon corn-meal, or who have not accustomed themselves to its use gradually, become excessively tired of this kind of diet when suddenly confined to it without a due proportion of wheat bread. Large numbers of the Federal prisoners appeared to be utterly disgusted with Indian corn, and immense piles of corn bread could be seen in the stockade and hospital inclosures. Those who were so disgusted with this form of food that they had no appetite to partake of it, except in quantities insufficient to supply the waste of the tissues, were of course in the condition of men slowly starving, notwithstanding that the only farinaceous form of food which the Confederate States produced in sufficient abundance for the maintenance of armies, was not withheld from them. In such cases an urgent feeling of hunger was not a prominent symptom; and even when it existed at first, it soon disappeared, and was succeeded by an actual loathing of food. In this state the muscular strength was rapidly diminished, the tissues wasted, and the thin, skeleton-like forms moved about with the appearance of utter exhaustion and dejection. The mental condition, connected with long confinement, with the most miserable surroundings and with no hope for the future, also depressed all the nervous and vital actions, and was especially active in destroying the appetite. The effects of mental depression and of defective nutrition were manifested not only in the slow, feeble motions of the wasted, skeleton-like forms, but also in such lethargy, listlessness, and torpor of the mental faculties, as rendered these unfortunate men oblivious and indifferent to their afflicted condition. In many cases, even of the greatest apparent suffering and distress, instead of showing any anxiety to communicate the causes of their distress, or to relate their privations and their longings for their homes and their friends and relations, they lay in a listless, lethargic, uncomplaining state, taking no notice either of their own distressed condition or of the gigan-

tic mass of human misery by which they were surrounded.* Nothing appalled and depressed me so much as this silent, uncomplaining misery.

"It is a fact of great interest that, notwithstanding this defective nutrition in men subjected to crowding and filth, contagious fevers were rare, and typhus fever, which is supposed to be generated in just such a state of things as existed at Andersonville, was unknown. These facts, established by my investigations, stand in striking contrast with such a statement as the following, by a recent English writer."¹ (Vol. iii. pp. 151-155.)

The nature, composition, digestibility, and relation to the tissues of the various alimentary principles and compound aliments, both solid and liquid, are treated of in chapters two, three, and four, in a manner as eminently practical as it is philosophical. The remarks upon those articles usually classed together as auxiliary or accessory aliments, as tea, coffee, alcohol, &c., are especially worthy of perusal. Of all the articles consumed by man, none has given rise to more animated discussion among physiologists, and to more conflicting opinions as to its influence upon the economy, than alcohol. In the present days of excessive, and, it must be confessed, indiscriminate resort to stimulation in disease, the following cautious language of our author with regard to the effects of alcohol commends itself with great force to the practical physician:—

"In the present state of our knowledge, alcohol cannot be regarded as an aliment; but it is undoubtedly capable of profoundly affecting the nervous system, and, in its passage through the organism, has a decided influence on the process of nutrition.

"Taken in moderate quantity, alcohol generally produces a certain amount of nervous exaltation, which passes off as it is eliminated. In some individuals the mental faculties are sharpened by alcohol, while in others they are blunted. There is nothing, indeed, more variable than the immediate effects of alcohol on different persons. In large doses the effects are the well-known phenomena of intoxication, delirium, more or less anæsthesia, coma, and sometimes, if the quantity be excessive, death. As the rule, the mental exaltation produced by alcohol is followed by reaction and depression, except in debilitated or exhausted conditions of the system, when the alcohol seems to supply a decided want.

"The views of physiologists concerning the influence of a moderate quantity of alcohol on the nervous system are somewhat conflicting. That it may temporarily give tone and vigour to the system, when the energies are unusually taxed, cannot be doubted; but this effect is not produced in all individuals. The constant use of alcohol may create an apparent necessity for it, producing a condition of the system which must be regarded as pathological.

"The immediate effects of the ingestion of a moderate quantity of alcohol, continued for a few days, are decided. It notably diminishes the exhalation of carbonic acid and the discharge of other excrementitious principles, particularly urea. These facts have long since been experimentally demonstrated;² but recently, very important observations have been made by Dr. Hammond, which bear more particularly on the influence of this agent on nutrition. It is well known that by carefully regulating the diet, exercise, etc., the weight of the

¹ Dr. Jones states in another part of his report (vol. ii. p. 14), that "but a comparatively small number of the Federal prisoners were affected with malarial fever, and the deaths from this disease amounted to but a small fraction of the deaths from all causes;" and again it is stated (p. 41), that "the comparative immunity from malarious disease among the Federal prisoners is still further shown by the small number of cases of neuralgia entered upon the sick reports: amongst the large body of Federal prisoners, with a mean monthly strength of 21,120, only 33 cases of neuralgia were reported during a period of six months."

² The influence of alcohol on the exhalation of carbonic acid has already been considered (see vol. i., Respiration); and its effect on the quantity of urea discharged will be more fully treated of in connection with excretion.

body, in a healthy man, can be maintained for a time at a standard which may be taken as normal. Under these conditions the mind is clear, the appetite good, the food is relished, and every function appears to be in normal operation. Dr. Hammond—after a number of experiments in which he established, in his own person, the conditions which would maintain the weight at a fixed point, and having noted the exact quantities of the excretions and the exhalations from the lungs—took at breakfast, luncheon, and dinner four drachms of alcohol diluted with an equal quantity of water, and continued this for five days. The results we give in his own words:—

“Thus, after the use of sixty drachms of alcohol in five days, my weight is seen to have increased from an average of 226.40 pounds to an average of 226.85 pounds, being .45 of a pound difference. The carbonic acid and vapour of water in the expired air had respectively decreased 1324.50 and 196.51 grains; the feces, 1.22 ounce; the urine, 3.43 ounces; the urea, 87.19 grains; the chloring, 37.59 grains; the phosphoric acid, 24.47 grains, and the sulphuric acid, 13.40 grains. The free acid and uric acid, especially the former, were so slightly affected as to render it probable that the alcohol had exercised no influence upon them.’¹ During this time there was some disturbance of the general health. The pulse was increased in frequency, there was headache, and the mental faculties were not so clear as on the days when no alcohol was taken.

“The second series of experiments was for the purpose of ascertaining the influence of alcohol when the body was losing weight from an insufficiency of food. It was found that by reducing the daily quantity of meat from sixteen to ten ounces, and the bread from eighteen to twelve ounces, the loss of weight was well marked. This diet was continued for five days, with the effect of reducing the weight from 226.73 to 225.34 pounds; a daily average loss of .28 of a pound. At the end of the five days, twelve drachms of alcohol were taken daily, as before, and continued for five days. The decrease in weight was not only arrested, but there was an increase of .03 of a pound daily. The quantity of food fully satisfied the appetite, and ‘all the functions of the body were performed with regularity;’ while during the five days preceding the use of alcohol, there was unusual exhaustion after exertion, ‘and the desire for food was very much increased, and was never completely appeased by the quantity ingested.’²

“In a third series of experiments, an excess of food was taken. This increased the weight by an average of .22 of a pound daily; there was constant headache, indisposition to exertion, loss of appetite, etc. For five days succeeding this, twelve drachms of alcohol were taken daily, with the effect of diminishing the quantities of excretions and exhalations, aggravating the unpleasant symptoms produced by the excess of food, and increasing the average gain in weight from .22 to .31 of a pound.

“These experiments demonstrate the actual immediate influence of alcohol upon nutrition, under the conditions above given; for the observer was a young man, in perfect health, and not accustomed to the constant use of alcoholic beverages. The observations were apparently conducted with great exactness, and continued sufficiently long to afford definite results; of which the following are some of the most important:—

“The ingestion of a moderate quantity of alcohol retards the destructive assimilation of the tissues; for the diminution in the quantity of the excretions in the experiments of Hammond was too long continued to admit of the theory that the effete products were simply retained in the blood and not removed by the proper organs. It is also demonstrated that when the system is so nourished that the weight is stationary, the moderate ingestion of alcohol, for a short time, will cause an increase in weight corresponding with the diminution in the quantity of the excretions; with, however, some disturbance of the general health and the mental faculties.

“The loss of weight consequent upon insufficiency of food may be tempora-

¹ Hammond, *The Physiological Effects of Alcohol and Tobacco upon the Human System*.—Physiological Memoirs, Philadelphia, 1863, p. 48.

² Loc. cit.

rily arrested and the unpleasant symptoms relieved by the use of alcohol in moderate quantity.

"The gain in weight following over-ingestion of food is increased and the disturbance of the system aggravated by the use of alcohol.

"If the observations showing the elimination of alcohol from the system be taken as conclusive, it is evident that this agent influences nutrition in its passage through the organism, and that its immediate effects are of a transitory nature. It cannot be considered as an alimentary principle, or as capable of supplying the place of articles which are actually assimilated. The proper amount of mental and physical exercise, tranquillity of the nervous system, and all circumstances which favour the vigorous nutrition and development of the organism physiologically increase, rather than diminish the amount of the excretions, correspondingly increase the demand for food, and, if continued, are of permanent benefit. Alcohol, on the other hand, diminishes the activity of nutrition. If it be long-continued, the assimilative powers of the system become so weakened that the proper quantity of food cannot be appropriated, and alcohol is craved to supply a self-engendered want. The organism may, in many instances, be restored to its physiological condition by discontinuing the use of alcohol; but it is generally some time before the nutritive powers become active, and alcohol, in the meantime, seems absolutely necessary to existence.

"Under ordinary conditions, when the organism can be adequately supplied with food, alcohol is undoubtedly injurious. When the quantity of food is insufficient, alcohol may supply the want for a time, and temporarily restore the powers of the body; but the effects of its continued use, conjoined with insufficient nourishment, show that it cannot take the place of assimilable matter. These effects are too well known to the physician, particularly in hospital practice, to need further comment.

"Notwithstanding these undoubted physiological facts, alcohol, in some form, is used by almost every people on the face of the earth—civilized or savage. Whether this be in order to meet some want occasionally felt by and peculiar to the human organism is a question upon which physiologists have found it impossible to agree. That alcohol, at certain times, taken in moderation, soothes and tranquillizes the nervous system and relieves exhaustion dependent upon unusually severe mental or physical exertion, cannot be doubted. It is by far too material a view to take of existence, to suppose that the highest condition of man is that in which the functions, possessed in common with the lower animals, are most perfectly performed. Inasmuch as temporary insufficiency of food, great exhaustion of the nervous system, and various conditions in which alcohol seems to be useful, must of necessity often occur, it is hardly proper that this agent should be utterly condemned; but it is the article, *par excellence*, which is liable to abuse, and the effects of which on the mind and body, when taken constantly in excess, are most serious."

By far the larger part of the work under notice is occupied with a full and critically written account of that difficult subject, the physiology of digestion. In the ten chapters devoted to this function our readers will find an admirable exposition of the existing state of our knowledge of the composition, properties, and physiological actions of the saliva, gastric juice, bile, and pancreatic fluid.

The precise function of the mixed saliva in digestion is not yet finally settled. Bernard ascribes to it a purely mechanical action. Others contend that it exerts an important chemical function—the conversion of starch into sugar. Drs. Bidder and Schmidt and Jacobowitsch assert, as the result of their researches, that none of the secretions alone, which by their union constitute saliva, possess the power of transforming starch into sugar, but only a certain admixture of them, and that the converting power of the saliva resides in the buccal mucus mixed with the submaxillary fluid. Bernard has also shown that this is true of the saliva of the dog, but that it does not hold good with reference to the salivary fluid of

man. Experiments, frequently repeated, have shown that all the varieties of human saliva affect starch in the same manner as the mixed fluids of the mouth. According to Dalton, the parotid saliva of the human subject transforms starch into sugar as readily as the mixed saliva. In 1853, Grünewaldt and Schröder introduced, through a gastric fistula, a quantity of hydrated starch into the stomach of a fasting woman, and found that in a very short time a considerable portion of it had undergone conversion into sugar. Twelve years ago Dr. Chambers, in his excellent work upon *Digestion and its Derangements*, summed up our knowledge of this subject in the following words :—

“In fine, the present state of our knowledge seems to render it probable that of boiled or disintegrated starchy food, a considerable portion is turned into sugar by the saliva in its way to, and during its stay in the stomach; but that in the stomach the conversion is delayed, to be again renewed in the duodenum; that a good deal of the sugar is turned into lactic acid, and some absorbed in one form or the other.”

The subjoined quotation from Dr. Flint's work will show that since the above paragraph was penned no additional light has been cast upon this subject.

“There can be no doubt that the saliva, in addition to its important mechanical functions, transforms a considerable portion of the cooked starch, which is the common form in which this principle is taken by the human subject, into sugar; but it is by no means the only fluid engaged in its digestion, similar properties belonging, as we shall see hereafter, to the pancreatic and the intestinal juice. The last-named fluids are probably more active, even, than the saliva. The saliva acts slowly and imperfectly on raw starch, which is hydrated in the stomach and digested mainly by the fluids of the small intestine. In all probability the saliva does not digest all the hydrated starch taken as food; the greater part passing unchanged from the stomach into the intestine.”

According to Longet, the saliva, when mixed with gastric juice, still acts upon starch, but the sugar thus formed is not readily detected, being masked by the presence of other principles contained in the stomach. Dr. F. W. Pavy, well known by his physiological researches, in his recent work on *Digestion*¹ declares that the presence of even a small quantity of acid is sufficient to interfere with the transformative power of the saliva upon starch.

“It follows, therefore,” he says, “that directly the food reaches the stomach and is brought in contact with its acid secretion, all action of saliva upon starch must cease. Now, such being the case, and the food being delayed so short a time as it is in the mouth, it is questionable if the attribute under consideration can be looked upon as being of any physiological import.”

It will thus be seen that notwithstanding the numerous experiments conducted with the greatest care, the whole subject of the transformation of starch into sugar, by contact with the saliva, is involved in much doubt. We have yet to learn whether this transformation is an essential part of the digestive act or merely an accidental phenomenon; whether it is materially interfered with in the stomach, and by what cause, and whether it again goes on in the small intestines immediately beyond the pyloric orifice. We have yet to discover what becomes of the sugar found in the process of insalivation, what changes it undergoes, what are its uses, &c. Upon all these questions physiologists are far from being in harmony.

¹ A Treatise on the Function of Digestion; its Disorders, and their Treatment. By F. W. Pavy, M. D., F.R.S. London, 1867. p. 22.

When we turn to the study of gastric digestion we meet with a conflict of opinion equally great and equally annoying to the student of physiology. Since the days of Réaumur and Spallanzani it has been known that the gastric juice is acid in its reaction. In 1824 Prout, from his experiments upon digestion in rabbits, concluded that the acidity of the gastric juice was due to free hydrochloric acid. In 1833 Prof. Dunglison demonstrated the presence of the acid in the gastric juice obtained from the stomach of the well-known Canadian *voyageur*, Alexis St. Martin. In 1835 Braconnot experimented upon animals, with a similar result. Still more recently, Drs. Bidder and Schmidt, as the result of eighteen experiments upon the gastric juice of dogs, found free hydrochloric acid invariably present. They could detect no trace of any organic acid. In the stomach of a patient of Dr. Grünewaldt's, after abstinence, Dr. Schmidt could find no free hydrochloric acid. But in the same person, after the stomach was excited by the ingestion of dry peas, hydrochloric acid could be detected in the proportion of 0.1 in 100 parts, while no lactic acid was present. In 1786 Macquart declared that he found lactic acid in the gastric juice of the calf, and phosphoric acid in that of the ox and sheep. Chevreul, Graves, Leuret, and Lassaigue also adopted this view. In 1844 Bernard, Villefranche, and Barreswil concluded, from an elaborate series of experiments, that lactic acid was in reality the only free acid in the gastric juice; and that the muriatic acid which had been discovered by other observers was in reality generated by the decomposition of the alkaline chlorides by lactic acid at a high temperature. This view has also been sustained by Pelouse and Thompson, and by Lehmann. In 1856 Alexis St. Martin, being in Philadelphia, was again experimented upon by Professors Smith and Rodgers, with the following results: "1st. That the secretions of the stomach, when digesting, are invariably acid. 2d. That the acid reaction was not due to the presence of phosphoric acid. 3d. That if hydrochloric acid was present, it was in very small quantities. 4th. That the main agent in producing the characteristic reaction was lactic acid."

Thus, then, while Bernard, from his chair in the College du France, tells his students that the acidity of the gastric juice is due to lactic acid, Longet, Professeur de Physiologie à la Faculté de Médecine de Paris, teaches his pupils that the gastric juice contains a characteristic acid compound of pepsin and hydrochloric acid, together with a small proportion of free lactic acid. While the Professor of Physiology in one of the two medical schools of Philadelphia maintains that he found free hydrochloric acid in the gastric juice of Alexis St. Martin, the incumbent of the same chair in the other college declares that he could detect no trace of this acid in the gastric fluid of the same subject, but found in its stead lactic acid in a free state.

This extraordinary discrepancy of statement relative to a question of fact shows how inherently difficult is the study of experimental physiology, how few are competent to undertake it, and how very important a correct scientific method is to him who would successfully study the phenomena of life.

The whole subject of the acidity of the gastric juice is ably and fully discussed by Dr. Flint. After pointing out with much critical acumen the errors into which different experimenters have fallen, he sums up as follows:—

"On what does the Acidity of the Gastric Juice depend? This is the simple question to which the foregoing discussion naturally leads; and it is one which

can be answered almost with positiveness, though it is not settled to the satisfaction of all physiologists, and there are some conflicting observations which can be harmonized only by new researches.

"Aside from the conditions under which acids, such as the butyric, acetic, or the lactic, are developed from articles of food taken into the stomach, the evidence is strongly in favor of free lactic acid as the principle on which the gastric juice mainly and constantly depends for its acidity. There also exists a certain proportion of the biphosphate of lime; and this is the only condition in which a phosphate of lime can exist in the presence of free lactic acid.

"The observations of Bidder and Schmidt indicate, apparently, a quantity of chlorine in the gastric juice not to be accounted for by the proportion of bases obtained by ultimate analysis. There is evidence sufficiently positive to show that there is no hydrochloric acid in the gastric juice, in a condition which allows the fluid to present the reactions which are observed when this acid exists in a free state. If there be any hydrochloric acid not in combination with metallic bases, it is united with organic matter in such a way as to prevent the manifestations of its ordinary properties, excepting that of acidity. The fact that some of the mineral acids can be made to unite in this way with albuminoid substances lends colour to this supposition; although further investigations are necessary to demonstrate that this takes place in the gastric juice."

Our space will not permit us to follow in detail the very excellent account which Dr. Flint has given of the various complicated processes, which in the aggregate make up the function of digestion. Let it suffice to say that, except in some of the exhaustive French treatises on Physiology, such as those of Milne-Edwards and Longet, we have nowhere met with so lucid and so well-considered an exposition of the digestive act. This remark applies with equal force to the manner in which the subject of absorption has been treated in the concluding chapters of the volume under notice.

Bichat, in his well-known treatise on *Life and Death*, declared that "Physics are not accessory, but foreign to the science of physiology." Since the time of Bichat it has been a prevailing doctrine among physiologists that the phenomena of life are wholly distinct from those of inorganic matter. The extraordinary progress which has recently taken place, however, in different branches of physiological science, has conclusively shown that many of the so-called vital phenomena are in reality explicable upon physico-chemical principles alone. The conviction is yearly growing stronger and stronger in the minds of physiologists that the diversified and complicated processes which constitute the life of man will, sooner or later, be brought within the domain of physical science. At the meeting of the British Association, held at Nottingham, in 1866, Prof. Huxley, the President of the Biological Section, in the course of his address, did not hesitate to say that the science of physiology was nothing more than applied chemistry and physics. Such broad statements are undoubtedly premature, and not warranted by facts. They, nevertheless, are very significant of the present tendency of physiological science. The function of absorption was at one time regarded as a purely vital act. Recent investigations have clearly demonstrated the error of this view. Many physiologists regard the absorptive process as wholly physical in its nature. That eminent physicist, Dr. Draper, of New York, emphatically declares that physical forces alone are abundantly sufficient to enable us to account for all the phenomena of absorption. Nothing, in Dr. Flint's work, has interested us more than the cautious and very philosophical manner in which he endeavours to define the extent to which physical laws are applicable to the process of absorption as it occurs in

the human organism. Dr. Flint has already earned for himself the reputation of a skilful experimenter and a good observer. His remarks upon imbibition and endosmosis show that he also possesses the power of logical reasoning in a high degree. After dwelling upon the fact that in experiments performed out of the body, the conditions favourable to the passage of liquids through membranes in accordance with purely physical laws, cannot be realized as they exist in the living organism, he says:—

“It is not necessary to invoke the vital properties of tissues to explain the ordinary phenomena of absorption. Enough has been learned of the laws which regulate endosmosis and exosmosis to enable us to explain most of these phenomena upon physical principles. This fact has been apparent in studying these principles in their relation to absorption in the living body. But it is an important question to determine whether this be applicable to all the varied phenomena of physiological absorption. In other words, are there any modifications in this function which cannot, as yet, be explained by physical laws?

“Admitting the fact that the general process of absorption takes place in accordance with the laws of endosmosis, we will now consider some of the phenomena which appear to be in opposition to known physical principles, or in which the application of these principles seems to be imperfectly understood.

“It is not easy to understand how particles of emulsified fat find their way through the walls of the lacteals and the bloodvessels. The experiments of Matteucci with alkaline emulsions, which we referred to fully in connection with the absorption of fats, seem to show that alkalinity is a condition necessary to the penetration of fatty particles, though they do not offer an explanation of the mechanism by which these particles pass through membranes. It has been demonstrated that the epithelium which covers these membranes becomes filled with fatty granules during the absorption of emulsions, and we must invoke the aid of “cell-action,”—concerning which, it must be confessed, that there exists very little definite information—in explanation of this phenomenon. The penetration of membranes by fatty particles must be regarded as one of the points which cannot be fully explained by the laws of endosmosis.

“There are certain experiments on absorption in the living body, to which a great deal of importance was attached by Longet, which are seemingly in opposition to physical laws. This author states that when solutions of sugar of different densities are secured in isolated portions of the intestine of a living animal, the denser solutions are absorbed with as much rapidity as those which are less concentrated. He also shows that saline solutions of greater density than the blood are absorbed in the living animal, when, according to physical laws, the current should take place in the opposite direction. The view that these facts are in opposition to physical laws is very successfully controverted by Milne-Edwards. This author, referring to some experiments by Von Becker in support of his position, asserts that there is first an exosmosis of the watery portions of the blood to these dense solutions, with a feeble penetration of the solutions into the bloodvessels, until, by the laws of diffusion, the solutions become so diluted as to be taken into the circulation.¹ Such an action as this could not take place between two saline solutions in an endosmometer, for both currents would cease when the liquids became of equal density; but it has been shown that after endosmosis in an endosmometer has ceased, it may be again induced by simply agitating the liquids. In physiological absorption, the motion is constant and very rapid, and solutions in their passage along the alimentary canal are continually exposed to fresh absorbing surfaces. Furthermore, the albumen of the blood, which is very slightly exosmotic, will attract an endosmotic current from liquids even when they are of the same density. The kind of action described by Milne-Edwards would be by no means an isolated example of a liquid passing out of the bloodvessels to be again absorbed after it has acted upon matters contained in the alimentary canal. This takes place with all the digestive fluids; and the liquid is effused, not by simple exosmosis,

¹ Milne-Edwards, *Lçons sur la Physiologie*, Paris, 1859, tome v. p. 192.

but by an act of secretion excited by the impression made upon the mucous membrane. We are not justified, therefore, in assuming, with Longet, that the absorption of solutions of greater density than the blood is always in opposition to the laws of endosmosis.

"The imbibition of the colouring matter of the bile by the coats of the gall-bladder after death, while nothing of the kind takes place during life, is not due to the absence of vital action. During life, the circulation in the mucous membrane of this reservoir would readily remove the few particles of colouring matter which might penetrate from the bile, and of course there is no time for any colouration to take place.

"In treating of the variations and modifications of absorption, we noted an apparent elective power in the mucous membrane of some portions of the alimentary canal. This is illustrated in the failure of the mucous membrane to absorb the woorara and various of the animal poisons, which, as a rule, are only effective when introduced into a wound or injected into the areolar tissue. The separation of various soluble substances by the process known as dialysis may throw some light upon this subject, but as yet we have no facts which offer a satisfactory explanation of this phenomenon. Certain of these phenomena which show an apparent elective power in absorbing membranes are probably due to a cell-action resembling secretion; for all these surfaces are covered with epithelium, which must be penetrated before the fluids can get to the blood-vessels. But even with regard to the selection of materials from the blood to form secretions, very little of a definite character is known.

"Those who believe that absorption is often modified by vital action offer this in explanation of the important influence of the nervous system on this function. Precisely how the nervous system affects absorption, in all instances, it is impossible in the present state of our knowledge to determine; but modifications are frequently effected through the sympathetic system. These nerves, as is well known, are capable of producing important local changes in the circulation, and can even temporarily arrest the capillary circulation in some parts; and it is in this way that many of the variations in absorption may be produced."

With these references to a few of the more important points of its contents, we take leave of Dr. Flint's book. The next two volumes of the series are to be devoted to Secretion and Excretion, Nutrition, Movements, &c., the Nervous System and Generation. If these two volumes should equal the first in excellence of material and style, we feel convinced that Dr. Flint's work, as a whole, will take a high position among modern standard works on physiology.

J. A. M.

ART. XIX.—*Traité Expérimental et Clinique de la Régénération des Os et de la Production Artificielle du Tissu Osseux.* Par L. OLLIER, Chirurgien en chef de l'Hôtel-Dieu de Lyon; avec 9 planches gravées sur cuivre et 45 figures intercalées dans le texte. Tome premier, Partie Expérimentale; Tome seconde, Partie Clinique. 2 vols. in-8 maj., pp. xx. 443, 531. Paris: Victor Massonet Fils, 1867.

Experimental and Clinical Treatise on the Regeneration of Bones, and on the Artificial Production of Bony Tissue. By L. OLLIER, Surgeon-in-chief to the Hôtel-Dieu of Lyons; with plates and woodcuts. Two volumes, royal 8vo.

THE name of Ollier is already, doubtless, well known to our readers, as indeed it must be to all who are interested in the progress of surgical

pathology, from the very remarkable and admirable papers which he has contributed during the last ten years to the "*Gazette Hebdomadaire de Médecine et de Chirurgie*," the "*Journal de la Physiologie*" (Brown-Séquard's), and other medical periodicals of Paris and Lyons. The subjects which during this time have received his special attention have been the regeneration of bone through the agency of the periosteum, the reconstruction of joints (after articular resections), and what may, perhaps, best be designated as "periosteal osteoplasty," and the production of bony grafts. In the prosecution of his investigations, M. Ollier tells us, he has performed a large number of experiments on the lower animals, and, by his position in the Hôtel-Dieu of Lyons, has, since 1860, been enabled to test and verify the conclusions he had derived from experimentation, by careful clinical observation of a great many cases of bone lesion in the human subject. The fruits of this ten years' cultivation of the wide field laid open before him, M. Ollier has recently communicated to the public in the work contained in the two goodly volumes which are now upon our table.

It is our intention to present our readers with a brief analysis of this result of M. Ollier's labours, and in doing so to examine somewhat critically the applicability of his views to the civil and military practice of surgery.

M. Ollier's work is most appropriately dedicated (as an important contribution to physiological surgery) to MM. Claude Bernard and Velpeau, who may well be considered representative men in the departments of science which they have respectively so brilliantly illustrated.

An interesting preface of twelve pages furnishes some account of the method which our author has pursued in the conduct of his studies, and must serve to convince the reader, that whatever view he may take of the conclusions to which these studies have given rise, the conclusions themselves have been, at all events, carefully and honestly deduced.

The work itself is opened with an introduction, divided into two portions; the first treating "of experimentation upon the bony system, from the point of view of human surgery," and the second giving an "historical sketch of the theories on the regeneration of bones, and of experiments on the osseous system."

The author begins by pointing out the importance and even necessity of experimentation upon the lower animals for the correct study and appreciation of surgery as applied to the bones. The exact ideas which we now possess with regard to the normal nutrition of the skeleton, and the origin of its morbid alterations, date back for not more than a century, and are founded, we are told, on Duhamel's celebrated experiments. Our theories of the formation of callus, and of the reparation of bones in cases of necrosis, were, previous to that period, without any real scientific value, and those points upon which uncertainty still exists, are precisely those which need to be illustrated by further and more accurate experiments than have yet been made. Malgaigne is referred to as the surgeon of modern times who has, perhaps, most thoroughly appreciated the importance of experimental observation; and his classical works on "Fractures and Luxations," and on "Surgical Anatomy and Experimental Surgery," are instanced as exhibiting at almost every page the great advantages which he himself had derived from this method of study. The illustrious names of Hunter and Bichat, with, in later times, Chaussier, Bécclard, Dupuytren, Breschet, Cooper, Travers, Heine, Amussat, and

Jobert, may be enumerated in the same category, as surgeons who have recognized the necessary dependence of practical surgery upon the carefully conducted study of experimental physiology.

At the end of the last century and at the beginning of this, when the modern practice of resection first came into notice through the labours of White, Moreau, and others, the question of the reproduction of bone was argued, but without any practical result, for affirmative were simply balanced against negative cases, without any attempt to explain why in certain instances a true bony reproduction took place, which in others was entirely deficient. The fact was, that those cases where the parts removed were regenerated, were cases of necrosis, where the periosteum had been spontaneously separated by the diseased action; while in healthy bones it was almost if not quite impossible, by the operative procedures then employed in resections, not to destroy the periosteum, and thereby totally prevent any bony reproduction whatever.

While there are still numerous points in the process of development of bone which require further elucidation, the microscope has served to throw light upon other points which were long eagerly, though blindly debated. "In following the modifications of the cells of the periosteum, it has been seen that the transformation of this membrane into bone was a reality. Accordingly, upon this point there is no diversity between Virchow and Duhamel, but simple variations of language, explicable by the difference of times."

The questions most urgently calling for investigation at present, in view of the existing state of surgery, are that of the regeneration of bones after resections or total excisions, and that of periosteal and osseous osteoplasty.

Besides these, the general theory of the growth of bones healthy and diseased, resected and reproduced, and that of the healing of these organs after fractures or after lesions which affect the various elements of their tissue, demand special development.

These matters can only be properly studied by careful and painstaking physiological and pathological experimentation. Our author quite appreciates the absolute necessity of *accurate* and *oft-repeated* experiments: "The history of Experimental Physiology is encumbered by unproductiveness, and nothing has so much retarded the progress of this science at certain periods, as defective experiments, announced with *éclat* and sustained by a great name." Not only must allowance be made, in experiments upon normal nutrition, for the new and disturbing element introduced by the irritation of the experimental procedure itself, but account must also be made of the effect of a change in one tissue upon the tissues adjoining—something like what the older writers would have called a "sympathy by contiguity." Thus, there is demonstrable a sort of action by presence on the part of bone, and especially of its periosteum, which gives rise to a special tendency to ossification in all the connective tissues in the neighbourhood.

M. Ollier's experiments have been made upon dogs, cats, rabbits, sheep, pigeons, chickens, etc. Bone is more easily reproduced by the periosteum in the lower animals than in man, but it does not follow that it should be more easily reproduced in those which are lowest in the scale of creation, than in those whose structure more nearly approaches that of the human being. Thus "transplantations of periosteum succeed much better in the dog and cat than in the sheep and calf, and yet the two latter animals are considered further removed from man."

Our author well states the limits of the applicability of experimental physiology to surgery :—

“It must not be thought that an operation is sure to succeed in man merely from the fact that it is perfectly tolerated by certain animals. Experimental physiology does indeed furnish the surgeon with very legitimate motives of action, but clinical observation alone must exercise the final judgment. It is above all in another point of view that the utility of experiments should be considered ; their principal advantage is to separate, to decompose complex facts which can only be unravelled by isolating their elements. We seek simple facts, and we exercise our ingenuity in reproducing them. We then decompose complex facts in order to arrive at their interpretation. By proceeding thus, we find laws which are applicable to all animals that have the same conformation, and which consequently are applicable to man.”

The experiments of Duhamel, Troja, Heine, Flourens, and others, brilliant and satisfactory as they were, did not succeed in establishing the doctrine of the regeneration of bone from periosteum, as an acknowledged truth, with either physiologists or surgeons. It was not until the idea occurred to our author of experimenting by the *transplantation* of periosteum, that the demonstration became irresistible, and the conclusion not to be gainsaid.

These preliminary considerations appropriately lead the way to the second portion of M. Ollier's introduction, which gives a brief historical sketch of the theories and observations of days preceding his own.

We shall not attempt to follow our author through this part of his subject, though it is full of interest, and in its manner of treatment shows wide research and careful and conscientious analysis. We may simply observe that M. Ollier divides the history of his subject into two periods, that of pure observation, from the time of Hippocrates and the earliest medical writers to the days of Havers (the describer of the so-called Haversian canals), and the second or experimental period, beginning with Duhamel (1739–1757), and coming down to the present time. That bone can be reproduced and that the periosteum is capable of reproducing it, have been repeatedly demonstrated by both experiment and clinical observation, and yet the practice of surgery, as regards resections, has been unmodified by these demonstrations until very recently. In fact, as remarked by our author, there are still, as at the beginning of the century, two classes of adversaries to be contended with ; those who admit that bone may be regenerated, but who think the periosteum unnecessary for the purpose ; and those who deny the possibility of osseous reproduction, even though the periosteum should have been most carefully preserved.

From motives of convenience, M. Ollier has divided his work into two portions, the first experimental, the second practical or clinical. The first part (occupying with the introduction, already considered, the first volume) contains fourteen chapters, and of these we shall now endeavour to furnish our readers with a short but sufficient analysis.

Every bone is formed of three essential constituents, viz., periosteum, marrow, and bony structure proper ; to these may be added a fourth, cartilage, which, however, in the case of a great many bones, acts a part which is only temporary. These several substances are in variable proportion, according to the kind of bone and its period of development. Physiologically and pathologically they are intimately united, though each has distinct functions, whether in the normal development of bone or in the various morbid processes to which it may be subjected. To ascertain, therefore, their relative share in the complex phenomena of

normal and accidental ossification, it is necessary to make each the subject of special study in its individual power of action.

To demonstrate the possibility of the periosteum alone giving rise to a new formation of bone, M. Ollier describes three series of experiments which he has performed, by transplanting portions of this membrane to a greater or less distance from their natural position. In the first series, he dissected up a flap of periosteum, having first separated it from its muscular connections, and spread it out in a kind of nest previously prepared in the surrounding soft tissues.

One extremity of the periosteal flap was permitted to retain its natural attachments, while the other was secured in its new position by a single suture. The wound then being carefully closed, immediate union was generally obtained, and the animal being sacrificed at periods varying from six weeks to three months, well-marked new formations of true bone were found to have been developed from the transplanted membrane, the size and shape of the new portions corresponding with the size of the periosteal flaps, and the positions in which they had been placed. These experiments were performed on rabbits, cats, and dogs, success in the latter being more difficult to obtain, on account of the proneness to suppuration generally observed in wounds of that animal. The bone generally employed was, from motives of convenience, the tibia; though a perfectly successful result was secured in one instance from the periosteum of the skull in a cat.

A second series of experiments was then instituted, in which, when the process of ossification in the transplanted flap had already begun, its remaining attachment to the main body of periosteum was severed. In these experiments it was found that the process of bone formation went on just as well after as before these connections had been destroyed; and it was thus shown "that the production of bone goes on and is completed by the periosteum's own power of action, when the flap has already contracted adhesions with the tissue in the midst of which it is placed."

The third series of experiments carries the demonstration still further, and shows that even the temporary continuity with the main body of periosteum is unnecessary. In these experiments the periosteal flap, having been bared and dissected, as in the previous series, was absolutely removed from all its attachments and transplanted or grafted into a widely distant part of the animal's body. By this plan true and distinct bones, with true periosteal coverings, and containing marrow cavities and marrow, were developed wherever the graft could be inserted. Thus a strip of periosteum from the tibia of a rabbit produced a bone beneath the scalp; the new formation, at certain points, being as thick as the diaphysis of the ulna had been at the time of the experiment.

As was before observed, these experiments are not equally successful with all animals. They almost always fail with those of the ruminant class on account of suppuration of the wound, while in the dog, cat, and rabbit, primary union and success can generally be obtained.

"It is only by direct experimentation, in every case, that we can ascertain the greater or less aptitude of any particular animal for the periosteal graft. Accordingly we do not know as yet whether the transplantation of periosteum to a distance would produce osseous tissue in man, but everything leads us to believe that it would, provided that union by the first intention could be obtained, and that a young and healthy subject should be chosen for the experiment."

In old animals, the periosteum, though it may contract adhesions in its new position, will remain fibrous without any development of bone. Other causes which may hinder or prevent the success of the experiment are carelessness in the operative procedure, accidents to the wound after the operation, want of care in removing foreign bodies from the wound, or a bad state of health in the subject selected for experiment. While advanced age will interfere with the production of bone from periosteal grafts, too great youth, on the other hand, may produce likewise a deleterious effect, the transplanted portion itself becoming absorbed, as was found in three experiments made on dogs within ten or fifteen days after birth.

Again there is a difference as regards the bone from which the periosteal graft is derived. As a rule that obtained from the long, answers better than that taken from the flat bones, and in the former the portion nearest the joints does better than that from the centre of the shaft; this is explained by the fact that the periosteum in proximity to the articulations is thicker than at any other portion of the bone.

A curious experiment was performed by M. Ollier, with a view of determining the true function of the *dura mater*; two strips of this membrane, derived from the vault and the base respectively of the cerebral mass of a rabbit six weeks old, were inserted, one into either groin of another rabbit aged two months. Forty-one days later the strip from the convexity of the brain had produced a uniform osseous mass of the dimensions of a grain of wheat, while that from the base, although likewise ossified, was so in little isolated granules, which taken together scarcely equalled a half of the bony mass produced from the first strip. The difference is probably explicable by the very close adherence of the *dura mater* to the base of the skull, which renders its separation in that locality more difficult, and increases the probability of portions being left behind which are of the external layer, and that which is best adapted to the regeneration of bone.

In adult rabbits, no new development of bone was obtained, but a remarkable circumstance is that in all cases more bone was produced by the transplantation of *dura mater* than of *pericranium*.

Having demonstrated that the periosteum has in itself the property of producing true bony tissue, our author next proceeds to inquire whether, in the discharge of this function, the periosteum acts as a whole, or whether the osteogenetic power is an attribute of any particular portion of its structure. The following brief account of the microscopic appearances of the periosteum, we condense from M. Ollier's description:—

“There is first (going from without inwards) a thin layer of loose connective tissue, containing fat cells; but this layer does not, strictly speaking, belong to the periosteum; it results from the imperfect separation of the surrounding areolar tissue. This layer having been removed, we find a tissue of fibrous appearance, closely knit, and formed of very small corpuscles of connective tissue, united by an intercellular substance in the form of fine undulating fibres. This can be divided by needles into very close bundles, like dense fibrous tissue; it contains numerous elastic fibres. Towards the internal surface of the periosteum the cells become larger, the intercellular substance still retaining its fibrous appearance, and the elastic fibres become more and more numerous. If now the preparation be taken up by its internal or deep surface, elements of entirely different aspect are presented; these are oval or fusiform cells in the midst of a more or less distinct intercellular substance, which is granular or fibroid. Most of these cells have but one nucleus, but a certain number will be found in process of proliferation. Some, even, those which are nearest the bone (seen especially in very young

subjects). have altogether the appearance of the polynucleated cells of the marrow."

This structure is continuous with, and passes gradually into that previously described. This inner layer of the periosteum has been designated by various names, according to the different views of pathologists; thus Kölliker calls it the "blastema of ossification;" Virchow names it the "periosteal layer of proliferation;" while according to Ranvier (*Thèse Inaugurale*, Paris, 1865), upon whose views our author is disposed to look with much favour, it is formed of true marrow cells, which serve directly for the growth of the bone in thickness.

By the same process of physiological analysis which M. Ollier adopted in his previous experiments, he now proceeds to ascertain which portion of the periosteum is that which is concerned in the formation of bone; and he clearly demonstrates, (1) that the periosteum, deprived of its inner layer, is no longer possessed of osteogenetic powers, and (2) that portions, no matter how minute, of this inner layer, when transplanted, can and do produce particles of new bone, and that consequently this layer is entitled to the name which he proposes for it, of the "osteogenetic layer of the periosteum."

It is, however, to be observed that the external layer alone, after a long time (six months in one case), does regain partially the properties of the periosteum before being deprived of its osteogenetic portion, and a real, though very imperfect formation of new bone, may thus be obtained. It is also to be observed, that in detaching the periosteum from the bone, a part of the osteogenetic layer is left adhering to the latter; this performs an important part in the development of a new periosteum, as is not unfrequently seen in scalp wounds and other injuries of like nature.

Having established that the periosteum has the property, when transplanted, of giving rise to the development of new bone, our author next proceeds to demonstrate the complementary proposition that bone cannot be produced by the transplantation of any other analogous fibrous tissue. Experiments were made with tendons, aponeuroses, and fibrous capsules, and with the single exception of the *dura mater* (before referred to), the osteogenetic power was found to be limited to the periosteal, among all the fibrous tissues of the body. In one experiment, made with the tendo-Achillis of a rabbit, an apparent production of bone was observed; but examination with the microscope showed not ossification, but calcification merely; a not very unfrequent result of traumatic irritation of tendinous structure.

The osteogenetic property of the periosteum may then be considered as an established fact; the manner in which that property is exercised is, however, still an open question. The osteoplast or osseous cavity, it is generally conceded, is developed around a previously existing element. The theory of Ranvier, which our author is disposed to adopt, is as follows: there is, first, a dissolution and disappearance of the primitive intercellular substance of the periosteum, the cells themselves being as a consequence set free; these cells are subsequently arranged in concentric layers, and a new intercellular material is developed which finally becomes the true bony substance.

Virchow, as is well known, believes in a direct transformation of the connective tissue corpuscle, with a simultaneous invasion of the intercellular substance; this view, however, as pointed out by Robin (*Journal de l'Anatomie et de la Physiologie*, Sept. 1864), does not account for the

arrangement of the osteoplast in concentric layers. The distinguished editor of the *Journal de l'Anatomie*, himself, explains the development of bone by supposing the existence of a temporary layer of cartilage beneath the periosteum; this he terms "ossification by encroachment," the cartilage being invaded by a calcareous deposit at the moment of its formation. M. Ollier believes the production of cartilage from a transplantation of periosteum to be accidental, and due to an excess of activity in the transplanted portion; but, under any circumstances, the question has lost its importance since Virchow has shown that cartilage and connective tissue are interchangeable equivalents, which can replace each other, and which often proceed from the same source.

There is a limit to the growth of *hetero-topic* bones, or those developed from periosteal grafts. In the first place, as they have no "cartilage of conjunction," they do not increase in length, and secondly, although the contrary might be supposed *à priori*, they do not grow in thickness commensurately with normal bones in the same subject; the process of ossification ceases, as soon as all the ossifiable elements have been exhausted.

The structure of hetero-topic bone is fundamentally the same as that of normal bone; but it is to be noted that it resembles *very young* bone, more than that which is found in the adult. A very beautiful plate is given, showing the microscopic appearances of the new-formed osseous tissue.

With regard to the osteogenetic layer of the periosteum, at the commencement of his investigations, M. Ollier, influenced by the prevailing histological doctrines of the day, denominated it a subperiosteal blastema; he has since recognized that it is no exudation or amorphous new material, but that it has, in every stage of its development, the same fundamental structure as the rest of the periosteum, of which it is, indeed, but the active and bone-producing part.

M. Ollier's second chapter treats of the *marrow* and of its effects in the formation and nutrition of bones. The majority of the older anatomists supposed the marrow to be inclosed within a delicate but demonstrable membrane, to which they gave the name of medullary membrane, or internal periosteum. Even during the last century, however, the existence of such a membrane was denied by the illustrious Ruysch, and its non-existence has more recently been clearly proved by the researches of Gosselin, Regnault, and others. The external layer of the marrow is, indeed, somewhat different from those more deeply seated; it contains fewer fat-cells, and more of the polynucleated cells to which Robin has given the name of *myéloplaxes*. It is, in fact, of more recent formation than the deeper portions of the marrow, and we are thus led to a view of the true function of this substance in its normal condition. As the bone is formed directly from the periosteum, the marrow is in turn formed from the innermost layers of its surrounding bone, whether by direct proliferation of the osteoplasts, disembarassed from their calcareous envelope by liquefaction of the fundamental substance (Virchow), or otherwise, cannot at present be positively determined. The fact is, however, established that the medullary cavity grows at the expense of the inner layers of bone, not by a distension of its osseous envelope, but by a direct process of transformation whereby the inner layers of bone disappear as others are added exteriorly by development from the periosteum. The limits of our

¹ By this term "cartilage of conjunction," M. Ollier designates the temporary cartilage which connects the diaphysis of a bone with its epiphyses.

space will not permit us to go into the experimental details by which these positions are established; suffice it to say, that all of M. Ollier's investigations have been conducted with the same care and scrupulous attention to accuracy that characterized those to which we had occasion to refer, in considering his first chapter.

Though the property of marrow in its normal condition, is, as we have seen, rather antagonistic than analogous to that of the periosteum, yet under certain circumstances, it has itself the power of ossification independently of its surroundings. Marrow, when transplanted, never produces bone; this has been established by M. Ollier by at least fifty distinct experiments. When isolated, however, *in situ*, by means of a metallic tube thrust into the medullary canal, the case is different; under these circumstances, M. Ollier has obtained from the marrow itself a well marked new osseous formation. The marrow is thus seen to differ from the periosteum, in that while the latter normally tends to bone production, the former only does so when its cells are recalled to activity by a certain amount of irritation; nor must this irritation be too great, for if excessive the marrow will break down into pus; there being, in fact, as remarked by Virchow, no tissue more disposed to purulent transformation.

The marrow, unlike the periosteum, is exceedingly sensitive to pain; its sensibility increases in proportion to the nearness of the source of irritation to the nutritious foramen of its containing bone. The marrow is extremely vascular, but, contrary to what might be supposed, its nutritious vessels may be obliterated, without compromising the vitality of the bone. The absorbing powers of the marrow are very great. The injection of ten drops of a concentrated solution of cyanide of potassium has produced death in rabbits in from ten to twenty seconds, the rapidity being proportionate to the proximity of the place of injection to the trunk. The same amount of liquid injected into the liver, the lung, or the peritoneal cavity, did not produce fatal results.

Chapter Third treats of bone tissue proper, studied with regard to its individual activity and its relations with the periosteum and with the marrow. The intimate structure of bone is well described, and the processes of ossification and calcification duly considered, and the differences between them pointed out. The effects on bone of the removal of its periosteum are then considered; as already intimated in chapter first, under favourable circumstances, necrosis will not ensue, but a reproduction of true periosteum will take place. This is accounted for by the fact that a portion of the osteogenetic layer still adheres to the bone, and it is by its proliferation that the new periosteum is formed. That this new material is true periosteum is proved by the experiment of transplantation, by which new bone can be obtained just as from the original periosteum, though in much less quantity. This process cannot, however, be repeated indefinitely, and M. Ollier has never succeeded in procuring bone from the transplantation of periosteum of the third generation. Hence the author's conclusion that "the reproduction of periosteum, indefinite as far as it constitutes a cicatricial membrane, is, on the contrary, very limited as regards its property as an osteogenetic membrane. However real may be the activity of the superficial layer of the bone, this activity is diminished, exhausted, or changed in direction after a first denudation. The new cells are no longer fitted for ossification after they are removed from the bone. Nevertheless, in place, if the irritation continue, they may give rise to osteophytic productions, which may even rise beyond the level of the denuded surface."

A single removal of periosteum does not diminish the thickness of bone, which in young subjects may even become hypertrophied at the point of operation. Successive denudations, however, produce a depression which continues permanently. One curious fact is that bones bared of periosteum increase in length; a circumstance only to be explained by the supposition of a formative irritation propagated throughout the entire extent of the bone to the cartilages of conjunction.

If, after removing the periosteum, the bone be thoroughly scraped, so as to destroy any remnant of the osteogenetic layer, the periosteum will in time be reproduced, though more slowly than when that layer is allowed to remain; but the new periosteum will not in this case have the property of reproducing bone when transplanted.

Similarly, when superficial necrosis follows periosteal denudation, a cicatricial membrane will in time be reproduced; but as in the preceding case it will have no true osteogenetic power. The process by which this cicatricial membrane is developed is manifestly by proliferation of the superficial layers of the true bone tissue, and of the medullary matter contained in its canaliculi.

Destruction and removal of the marrow is not necessarily followed by necrosis of the surrounding bone. Under favorable circumstances, a new marrow is very rapidly formed, which, if the irritation continue, may further undergo the process of ossification.

Even the simultaneous removal of both periosteum and marrow, will not always give rise to necrosis; in one experiment of M. Ollier's on a healthy dog three months old, a new periosteum was formed at the end of five weeks, the medullary cavity was filled with a spongy bone tissue rather larger than the portion of marrow removed, and the whole bone itself was considerably hypertrophied.

A section on the chemical composition of bone in its various physiological states concludes the chapter.

Chapter Fourth treats of cartilage and of its part in the process of ossification. A good summary of the respective views of Robin, Kölliker, Virchow, and Müller, is given, and M. Ollier expresses his preference for the theory of the latter, as modified by Ranvier. "The essential characteristic of cartilaginous tissue is the formation of a cavity around a cell, known as the primordial cell. These cavities are disposed in a variable manner in the midst of a fundamental substance, which is hard, resisting, homogeneous, or fibroid." According to the theory which our author adopts, it is the true cartilage cell, or that contained within the cavity above referred to, which becomes the osteoplast, that cavity having been in the first place transformed into medullary tissue. The fundamental substance undergoes calcification, but no true ossification, and finally disappears by liquefaction and absorption.

Cartilage has an interstitial growth, in addition to that which depends on the perichondrium; this membrane shows its resemblance to periosteum by being transformed into the latter, in the case of the temporary cartilages.

M. Ollier has not succeeded in obtaining cartilage by the transplantation of perichondrium; from that derived from the epiphyseal cartilages he has found small bony nodules developed, while that taken from the permanent cartilages has remained fibrous.

Cartilage deprived of its perichondrium does not necessarily perish; when, however, transplanted in this condition, it is incapable of producing a graft.

Cartilage transplanted with its perichondrium may indeed be successfully grafted, and under favourable circumstances may undergo ossification. But the proliferation of its cells is not like that which takes place in the normal development of bone. While the *periosteal* graft produces a new bone of considerable dimensions, that originating from transplanted cartilage is never larger, and generally smaller, than the cartilage itself from which it is developed. An exception is noted in the case of *rats*, in which animals, according to Bert, transplantation gives to cartilage greater activity than if it were allowed to remain in its normal position.

Chapter Fifth treats of traumatic irritation of the different elements of bone, and of other substances of connective tissue formation. The effects of traumatic irritation upon these various parts of the body must be studied, in order to understand the accidental development of anatomical elements in tissues to which they do not normally belong. The general result of any traumatic irritation is the same in all the forms of connective tissue. As pointed out by Virchow (*Cellular Pathology*, Lect. XIV., Chance's edition, pp. 306 *et seq.*), the first effect is the enlargement of the cells, the proliferation of their nuclei and nucleoli, and the formation of new cells; the intercellular substance is for the time being unaffected. Soon, however, there is a perceptible tumefaction and change of colour in the intercellular substance, corresponding with its diminished transparency and the development of new vessels in its interior.

The rapidity with which these changes occur varies very much according to the tissue affected. In the deep (osteogenetic) layer of the periosteum, and in the marrow, where the intercellular substance is loose and unresisting, these modifications take place more quickly than in the fibrous and cartilaginous tissues where the intercellular substance is more dense. The process is still slower in the osseous elements, and almost totally inappreciable in the completely formed adult bone.

If the irritation be but slight, a gradual return to the normal condition may occur; or the process of change may be arrested, without, however, any retrogression, and there will then remain chronic induration and persistent increase of volume in the part affected. It is under these circumstances that the intercellular substance becomes sclerotized, and calcification or even true ossification may take place in tissues which normally do not tend to the production of bone. If the irritation be excessive, and especially if the tissue affected be rich in cells, a purulent transformation may occur, and *suppuration* will ensue; or before this stage is reached, a smaller or larger portion of the tissue concerned may die, and *sloughing* or *necrosis* will precede the formation of pus. This is particularly apt to happen in the case of bone, which is predisposed to a loss of vitality from its capillaries being inclosed in narrow and inextensible channels.

Under other circumstances, a prolonged chronic irritation may bring about secondarily a retrograde metamorphosis, giving rise to granular or fatty degeneration. In these cases there is a gradual absorption or disappearance of the tissue affected, the intercellular substance seeming to melt away, while the cells become successively obliterated.

Of course it is not M. Ollier's intention in his book, nor is it ours in this review, to furnish a complete account of the pathology and processes of inflammation; but the preceding very brief sketch has seemed necessary as a preliminary to the proper understanding of the remarks that are to follow upon osteitis and its terminations.

Direct irritation of the periosteum is very apt to be followed by suppu-

ration; but irritation transmitted either from the bone or from the surrounding soft tissues, excites the osteogenetic powers of the periosteum to fresh activity and a new production of bone is the result. In old bones this activity is more readily excited than in those of young persons. It is upon these facts, we may observe, that greatly depend the success of any measures for the cure of ununited fractures. The periosteum must be handled very delicately, or the operation itself, by exciting suppuration, will forbid the hope of success. We can understand too, from the above considerations, the occasional success of blisters in cases of bony non-union. The irritation being transmitted indirectly to the periosteum excites its osteogenetic property, without producing suppuration, and a cure is thus sometimes brought about. One valuable hint given by our author in this place, is that before operating on the periosteum of an old subject, it should, in the first place, be rejuvenated, as it were, by repeated slight or indirect irritations. Its vitality may thus be preserved, when if dissected from the bone without such previous preparation, it would have been very apt to become gangrenous, or at best to remain fibrous without any attempt at bone formation.

Irritation of the marrow may, as before observed, cause ossification of that structure, though more apt to produce suppuration. Irritation of the marrow will however be frequently transmitted to the periosteum and give rise there to a new bone formation, even more voluminous than would be produced by irritation of the periosteum itself. A very curious result is occasionally observed; the irritation of the marrow may cause suppuration of that substance, the bone be completely transformed into a new medullary tissue, while a voluminous formation of fresh bone is developed beneath the periosteum, the bulk of the whole being double what it was before the institution of the experiment. Similar phenomena are sometimes met with in cases of osteitis in the human being, and especially in children. M. Ollier has seen almost complete medullization of the phalanges, without the least necrosis, brought about in the short space of twenty days, by an attack of acute osteitis (*acute caries* of Ribes). The same thing he has observed in the case of the tibia of a youth of fifteen years; in this instance, however, slight necrosis had occurred at some points, and the disease had lasted two months.

Traumatic irritation of the bone itself may produce an immediate increase in the number of osteoplasts, or, on the other hand, may cause a hyperplasia of the marrow cells in the interior of the Haversian canals. In the latter case the process may continue by an absorption of the bony substance, with rarefaction and subsequent suppuration of the parts previously medullized. Or if the irritation cease before this effect is produced, the process of decalcification may be arrested and the formation of osteoplasts be resumed. This may even go so far as to result in a veritable eburnation, in this case the cure of the inflammation, or it may, as before observed, be the primary effect of a chronic, slow, and long-continued irritation.

Irritation of one of the elements of bone is always transmitted more or less to the others, and is always more or less diffused beyond the point originally affected. As a result, the same bone may present all degrees and varieties of inflammation. In one part there may be undue medullization—in another, eburnation; here, suppuration and necrosis—there, an exostosis, or ossification of the marrow. The irritation (especially in the young) may be transmitted to the cartilages of junction, and by

exciting fresh energy in the proliferation of their ossifiable elements, the length of the bone may be considerably increased. Thus osteitis affecting the diaphysis of a long bone may make the limb affected longer than the healthy limb of the other side of the body, a fact not unfrequently observed in the human subject. Osseous hypertrophy often follows upon irritation of the surrounding soft tissues; this is constantly seen in cases of old ulceration of the leg. Pressure may produce hypertrophy, as in the exostoses accompanying corns; or it may produce exactly the opposite effect, as in the formation of new joints after unreduced luxations.

"The law of accidental ossification is not yet well understood." The long continued use of a tube after the operation of tracheotomy has produced ossification of the tracheal rings; wounds and especially fractures of the costal cartilages are constantly followed by peripheral ossification of the perichondrium; on the other hand, the nasal and auricular cartilages are almost never the seat of bone formation. A curious *action by presence* on the part of the periosteum and other elements of bone is certain, but inexplicable; the same tissues which around an intermuscular abscess become indurated merely, in the neighbourhood of a suppurating periostitis, become positively ossified.

Inflammation does not affect the bone cells proper, except secondarily; its first effects are produced upon the marrow cells, the osteogenetic layer of the periosteum, and the contents of the Haversian canals. The only positive changes that can be recognized in the bone cells themselves, are those which are necro-biotic, the fatty and granular degenerations: these, however, seem sometimes to exist as a primary diathesis, and in such cases a frank traumatic irritation may sometimes serve to bring about a cure.

Necrosis is universally the result of *osteitis*; the capillaries of the Haversian canals become, as it were, strangulated against the bony walls which surround them, and arrested circulation, and death of the part deprived of blood is the consequence. Some interesting experiments are narrated, touching upon the artificial production of necrosis, which want of space compels us to pass over. Our author defines *sequestrum* as a portion of bone separated, but not necessarily entirely dead: in fact, as he remarks, the majority of sequestra extracted by surgeons are vascular in at least a portion of their extent. It is by the absorption or medullization, which goes on in this still vascular and living portion, that sequestra are finally spontaneously separated from the bones to which they have been attached. Bone that is actually dead is not changed by contact with the living tissues; our author in this point confirms the views of Mr. Gulliver, published in the *Medico-Chirurgical Transactions* for 1838. With regard to the term *insensible exfoliation*, our author very properly denies its applicability to the *absorption* of inflamed bone, and restricts its use to those cases where there is an actual throwing off of bony particles, minute though those particles may be. The recent experiments of Savory and Gmelin, on the absorption of sequestra, are referred to in a note; the observations of the English writer showing that *pressure* was the cause of the absorption, when met with.

Chapter Sixth gives us a very excellent account of the process of repair in bone wounds, and of the formation of callus. The reader who has followed M. Ollier through the preceding portions of the volume, will now be able to clearly understand this, which, as generally taught, is one of the most obscure and unsatisfactory subjects in the whole range

of surgical pathology. We would gladly transcribe for our readers a considerable part of this most valuable chapter, but the space already consumed in our analysis of what has gone before, and which was absolutely essential to a comprehension of the rest, warns us to forego that pleasure, and to content ourselves with very brief extracts.

The simplest form of fracture, and that in which the process of repair should, therefore, be first studied, is where the periosteum is not injured; in fact a subperiosteal fracture. Provided the bone be kept at rest, the only external phenomenon during the cure, is a slight tumefaction of the periosteum. This swelling is due to a hyperplasia of the deep or osteogenetic layer. At the same time the marrow becomes indurated, and generally undergoes ossification at the seat of fracture. The bone tissue itself remains ununited for a much longer time; it is only by a secondary process, as seen in chapters third and fifth, that it becomes fused with the new formations without and within, and that finally the solution of continuity is definitely repaired. Thus we see that the whole process of healing after fractures, the formation of the "provisional callus," so-called, and the various phenomena which all students find so complicated and so mysterious, are resolved into a perfectly simple and natural course of events, which is in fact nothing but an exaggeration of the process which is constantly going on in the normal growth and maintenance of bone tissue. This exaggeration is due simply and solely to the traumatic irritation. There is no mysterious organization of a previously exuded juice, no development of blastema or of exudation corpuscles, no transformation of blood clots or of suppurative lymph. There is no new process brought into action; nothing but a *traumatic excitation of the ordinary bone producing functions of the periosteum and other elements of bone*.

In fractures with great displacement, shortening, and overlapping of fragments, the periosteum is still almost never entirely broken across; the broken extremities of bone penetrate its sheath above and below, and the periosteum still serves to unite them by a kind of bridge passing obliquely between them. This periosteal bridge, in the process of healing, forms the bond of bony union. The osseous mass which is hence developed often exceeds in thickness the shaft of the original bone. A narrow cavity is gradually formed in its interior, which may finally communicate with those of the upper and lower fragments respectively; and the projecting extremities of these becoming absorbed and rounded off, more or less quickly, according to the age of the bone, the continuity and form of the osseous cylinder may in time be measurably restored.

In compound fractures the process of repair is the same; but it does not begin until the traumatic inflammation has subsided, and until suppuration has been fairly established.

The presence of *cartilage* in callus, as in the development of heterotopic bones is only temporary and due to excessive irritation.

In epiphyseal separations, the line of rupture is not through the cartilage of conjunction itself, but through the spongy layer at one or the other side. These injuries are repaired like wounds of bone rather than like those of cartilage. Even if immediately reduced, the growth of the bone in length is hindered as a sequel of the accident. On the other hand the thickness of the part will generally be permanently augmented.

The causes of *non-union* after fractures are rapidly discussed, and the labours, in this field, of our eminent townsman, Dr. Geo. W. Norris, briefly adverted to. With regard to the administration of phosphates in

cases of this nature, M. Ollier states that he has never been able to satisfy himself that they produced any good result; though he continues their use, from a conviction that at any rate they can do no harm. Our author has experimentally confirmed the views of Bernard and of Virchow, in opposition to those of Schiff, to the effect that section of the nerves of a limb produces no direct injurious effect upon the process of callus formation.

Fractures and wounds of the cartilages that have an investment of perichondrium, are united by an osseous or fibrous callus developed from that membrane. The edges of the cartilage themselves do not unite, though remaining in close juxtaposition. Wounds of the articular cartilages in very young subjects are united by a cicatricial tissue, which, however, assumes but imperfectly the characteristics of true cartilage. Wounds of the cartilages of conjunction unite by a cicatrix, which remains permanently fibrous.

Chapters Seventh and Eighth are devoted to a consideration of the regeneration of bones after resection or total excision; the former discussing the matter with regard to bones in general, and the latter taking up the question in the cases of the several classes of bones in detail. These chapters are full of interest, and replete with practical instruction. The principles and mechanism of bone formation, as described by our author, have, however, been so fully set forth in the preceding pages, that it will not be necessary for us to linger over the present portion of the volume. Suffice it to say, that M. Ollier has obtained complete reproductions of portions and even of entire bones in rabbits, cats, and pigeons, from the periosteum alone. We consider that he has well established the fundamental proposition, which he announces in the following terms: "The periosteum alone gives rise to veritable regenerations. Isolated from all other tissues of bone, it can, by itself, under certain circumstances, reproduce an entire bone, or a considerable bony portion, representing the form and fulfilling the functions of the organ removed." The remaining elements of bone tissue (marrow, cartilage, etc.) do indeed possess the bone producing power in a more or less limited degree, and under certain exceptional circumstances; but neither of them nor all of them together, *without the periosteum*, can be justly said, ever or in any way to exercise the property of causing a true *regeneration* of bone previously removed. "They undergo ossification in the neighbourhood of the periosteum, and aid it in its functions; but they cannot take its place."

While the process of regeneration in all bones is the same, the facility with which they can be regenerated varies greatly according to the nature of the bone concerned. In general terms it may be stated that the ease with which a bone can be reproduced is proportional to its thickness, and in the same bone reproduction will be most complete as regards those parts that are thickest. This depends upon the fact previously noted, that it is in those parts that the osteogenetic layer of the periosteum is best developed.

In the long bones, the central part of the diaphysis is the slowest of regeneration, and ossification not unfrequently fails at this portion, even when the epiphyseal extremities have been completely reproduced. The actual regeneration of the epiphyses has been doubted, it being supposed that the dilated extremities of the diaphysis took their place; but that they are really reproduced, is proved by the formation of new cartilages of conjunction, separating the epiphyses from the diaphysis as in the

natural bone. The only parts not reproduced are those covered with cartilage of incrustation. There is no periosteum in this locality, and of course no osseous regeneration.

M. Ollier has obtained in the dog partial regeneration of the humerus, after subperiosteal excision of the whole of that bone. The new formation was of the same general shape, though smaller, than the original bone, and it is to be specially noted that all the muscles of the part retained their relative points of origin and insertion, just as in the limb before the operation.

"In spite of the shortening of the member, a like result would be of inestimable value in the human subject, should it be determined to remove the whole humerus. The use of the hand would be in part preserved, and all the movements would remain possible to a certain degree. *In the lower extremity*" (the Italics are ours) "*the same result would be altogether insufficient, and would have totally different consequences in view of the functions of that part.*" It must, on the other hand, be remembered that if the entire periosteum should be removed in a similar case, there would not be obtained even the shadow of a regeneration."

Flat bones may be divided into three classes; (1) such as are surrounded with muscular tissue, as the scapula, the ilium, and the sternum; (2) such as have their periosteum continuous with a mucous surface, as the bones of the palate; and (3) those whose periosteum is lined with a serous membrane, as the bones of the skull, where, as has been seen, the dura mater is a bone-producing agent. Our author has obtained complete reproduction of the scapula in the dog and in the cat, and of the palatine vault in the dog; in one case from the palatine periosteum alone, that on the nasal surface having been destroyed. He has also obtained complete bony reproduction after trephining the skull of a sheep; though the regeneration of the cranial bones is as a rule unsatisfactory in the extreme. M. Ollier has obtained complete reproduction of the cuboid bone in a rabbit, and partial reproduction of the calcaneum in the same animal. He has not himself experimented upon the spinal column, but has in his possession a specimen given to him by Prof. Brown-Séquard of the reproduction of the posterior part of four vertebræ resected from the spine of a guinea-pig. The vertebral arches are fused together, but the spinal canal has been completely formed anew.

Chapter Ninth treats of the reconstitution of new joints between the reproduced articular extremities of bones. The difference in result, according as the periosteal and other fibrous constituents of the joint, with the muscular attachments, are preserved or sacrificed, is pointed out first as to joints in general, and secondly in the case of the individual joints, with the variations due to their nature as they belong to the ginglymoid, ball-and-socket, or mixed forms of articulation.

Not only is the preservation of the periosteum essential for the perfect reproduction of the articular extremity of a bone, but without it the *shape* of whatever new structure might be formed would be unsuited for the fulfilment of its functions. Moreover, besides serving as a mould to determine the form of the new material, the periosteum (together with the other fibrous tissues of the joint) acts an important part as a kind of internal splint to keep the articulation at rest during the period of the reproductive process.

In subperiosteal resections of joints as of the long bones, the attachments of the muscles are preserved, and in the new formation their points of origin and insertion will be relatively the same as in the natural condi-

tion of the part; whereas if the periosteum be sacrificed they will form new adhesions in irregular and vicious positions, and as a consequence the usefulness of the limb will be greatly hindered if not entirely abolished.

M. Ollier has obtained, by subperiosteal resection, almost complete reproduction of the elbow, knee, and shoulder-joints in the dog, and, which is still more important, an equally good result in the case of the latter articulation, in the human subject.

In Chapter Tenth are considered the mode of development and structure of reproduced bones and of new articulations. The process of formation of new bones in place of those removed by periosteal excision, does not vary from that heretofore studied in the production of heterotopic osseous productions, and in the repair of fractures and other injuries of bone tissue. It is, however, to be observed that the *cartilaginous* stage, which is exceptional in the case of heterotopic bones and in the development of callus, is the rule (though not uniformly observed) in the reproduction of bones after resection.

The reproduction is more perfect when portions of the original cartilage or bone remain in the periosteal sheath, than when such portions are entirely taken away.

The intermediate cartilaginous structure which exists between the new diaphysis and the new epiphysis, fulfils temporarily the functions of the original cartilage of conjunction. It is owing to this, that reproduced bones grow in length, to a certain extent, though they never attain the length of the corresponding bones of the opposite side. As a rule also they remain more slender than normal, though there are exceptions, as in the cases where an exuberant reproduction takes place, and where the reproduced part has been from the beginning more voluminous than the portion removed.

Reproduced bone presents many more centres of ossification than bone in its normal development. This is owing to the unequal activity of different parts of the periosteum. The earliest ossification takes place in the course of the periosteal bloodvessels, and in general terms the activity of the periosteum is proportional to its vascularity.

The diversity of appearance of the reproduced and of the old bone gradually becomes obliterated, at least as far as naked eye observation is concerned; for the results of microscopic examination of the newly-formed substance, the author refers to his chapter on the structure of heterotopic bones.

The modifications brought about in surrounding structures by the reproduction of resected bones, are the same in kind, if different in degree, from those observed in fractures and other bone lesions. The changes in the soft parts gradually disappear, but those in the adjoining bones usually remain permanent. Thus, if the radius be the bone resected, and the limb be used before-sufficient reproduction has been effected, the ulna will probably become the seat of osteophytic developments, or even of general circular hypertrophy. On the other hand, the resection of one bone renders the other peculiarly liable to fracture, or it may bend without breaking, and serious and persistent deformity ensue.

After resection of joints, the ligaments and all the fibrous tissues contribute to restore in a measure the form and usefulness of the part. They thicken and become vascular, their plastic elements undergo proliferation, while their intercellular substance becomes softened and otherwise modified. Vascular granulations proceed toward the centre of the

articulation, and sometimes assume very much the consistence and general appearance of cartilage. New interarticular ligaments are developed, as are also fibrous disks, not unlike in appearance the loose cartilages occasionally met with in the articulations. When one articular cartilage has been preserved, a partial reproduction of the synovial sac may be noted; in other cases its functions are in a measure accomplished by the development of a kind of "bursa mucosa."

Chapter Eleventh treats of the general and local conditions of the regeneration of bone, and of artificial means for augmenting the reproduced osseous mass.

The perturbing circumstances which interfere with the success of experimental operations, are shown to be very much the same as those which affect the result in operations on the human subject. Neatness and care in the operative procedure, and careful and judicious after-treatment, are equally important in either case. Especially is it desirable that the parts involved in the operation should be afterwards kept at rest; as otherwise the new bone, even if sufficient in size, would in shape and direction be so irregular as materially to compromise the good which might, under other circumstances, have resulted from the operation.

The influence of *age* upon the success of subperiosteal resections is well marked. The very young and the old are alike unsuited for these operations. M. Ollier has succeeded best with rabbits of about three months, an age corresponding to from eight to fifteen years in the human subject. *Pregnancy* does not seem to produce any marked effect one way or the other. The *state of health* of the animal at the time of the experiment exercises, as might be expected, a decided influence upon the success or failure of the operation. *An intercurrent malady* may arrest the reparative process, or may even cause it to retrograde. *The febrile state* seems to have peculiarly the property of causing the absorption and disappearance of an ossification which has already begun. At one time M. Ollier lost thirty-five or forty rabbits in succession from an epizootic affection which prevailed simultaneously with the existence of erysipelas among his patients in the Hôtel-Dieu.

The *time* required for bony regeneration is very variable; in general terms, the sooner it begins the more perfect will it become.

With regard to the artificial means to be adopted to augment the amount of bony reproduction, we may refer our readers to what was said on the subject in considering the repair of fractures and the formation of callus. We may merely add, in this place, that the existence of a moderate amount of inflammation and suppuration is not only not injurious but even desirable; excessive suppuration, however, by destroying the osteogenetic layer of the periosteum will prevent the reproduction of bone.

In Chapter Twelfth we have a discussion of the growth of bones in general, and of the law of growth in the long bones. The experiments of Duhamel, Hunter, Flourens, and others, made by feeding animals with madder, are referred to, and their results stated to be confirmed by M. Ollier's personal observations. The soft tissues grow by interstitial formation; the bones merely by superposition. This is the rule, though experiments upon very young animals would seem to show that their bones have *temporarily* the power of interstitial growth as well.

The long bones grow (in length) by ossification of successive layers of their cartilages of conjunction. But they do not grow equally from either extremity. The humerus, tibia, and fibula grow chiefly from their

upper ends; the femur, radius, and ulna from their lower extremities. Hence a law of the greatest importance, which M. Ollier formalizes as follows:—

“In the upper limb, for the bones of the arm and forearm, it is the extremity which contributes to the elbow that grows the least.

“In the lower limb, for the bones of the thigh and leg, it is the extremity which contributes to the knee that grows the most.

“The two principal segments of the same limb are therefore found to be in an inverse relation towards each other; the bones of the upper extremity are also in an inverse relation with regard to the analogous bones of the lower extremity.”

The importance of this law, which our author has experimentally established (as has likewise, independently, Professor G. M. Humphrey, of Cambridge), cannot be overestimated. It explains why resections of the knee are in young persons followed by such marked arrest of development, while resections of the hip and ankle do not entail the same disastrous results. Conversely, in the upper extremity, great shortening follows excisions of the shoulder and wrist-joints, while resection of the elbow has not the same disadvantage. Again, in *amputations* of the upper arm, as the principal source of growth remains, the bone (if the patient be a child) will inevitably grow more than the soft parts, and conicity, if not ulceration of the stump, result. This is not the case in the thigh, where by amputation the chief source of bony growth is removed. On the other hand, a conical stump is very apt to follow amputation of the leg, but will not occur after the same operation on the forearm.

A curious corollary to the above propositions is established by clinical observations; this is, that the extremity of election for normal growth is also the extremity of election for morbid growths, tumours, etc. Thus, exostoses, enchondromata, etc., affect in the upper extremity the shoulder and wrist rather than the elbow, while in the lower extremity their favourite seat is at the knee rather than at either the hip or ankle. The same law is stated by Broca to be observed with regard to the lesions of rachitis.

Chapter Thirteenth treats of the influence of irritation and ablation of different parts of a bone on its growth. The general causes of hypertrophy, or of arrest of development and atrophy of a bone, can be readily understood from what has gone before. It must be borne in mind that the periosteum differs from the cartilage of conjunction in that the former may be excited to additional activity by either direct or indirect irritation. The latter, on the contrary, responds in this way only to indirect irritation, while arrest of its function, and consequent bone shortening, result from any direct irritation of its structure. Prolonged want of use, or paralysis, give rise to atrophy of bones as of soft tissues. There is, however, a temporary elongation, due probably to the absence of pressure, to which M. Ollier gives the name of “*atrophic elongation*.” There is likewise, in cases of amputation, an elongation of the bones above the seat of the operation, and in cases of resection, an elongation of the bones both above and below. This is important, for it may sometimes serve to compensate in some degree for the arrest of development, which is uniformly observed in the bones immediately concerned in the operation. It is to be noted, however, that M. Ollier has not had occasion to observe this elongation in the human subject, though he has repeatedly noticed it in his experiments upon cats and other animals.

The peculiar reaction of the cartilage of conjunction, accordingly as it

is irritated directly or indirectly, is well illustrated by the difference observed in cases of fracture of the shaft of a bone, and in cases of epiphyseal separation. In the former there is a positive elongation, which may compensate for a slight amount of overlapping; in the latter there is always arrest of development, no matter how soon or how perfectly the separation may have been reduced.

Chapter Fourteenth, the last of the first volume, treats of *osseous grafts*.

M. Ollier has repeatedly obtained heterotopic bones by transplantation of periosteum; these bones are, however, not unfrequently after a time reabsorbed. But as it is a physiological law of universal applicability that the *stimulus of use* tends to the preservation and development of a part, it is possible that transplantation to supply a missing organ, such as the nose, would be more permanently successful than it is in experiments, which, however interesting and important, are of no physiological advantage to the animal concerned.

Hetero-periostic grafts, that is, from one animal to another of a different species, fail. M. Ollier has tried the experiment in sixty instances, and in only one obtained a success of very doubtful nature. In animals of the same species, however, the graft succeeds even after the animal from which the periosteum is derived has been dead twenty-five hours. The maintenance of a low temperature is essential for the success of the experiment, as above 16° C. ($60^{\circ}.8$ Fahr.) putrefaction is very liable to ensue. M. Ollier has succeeded, with a temperature of -2° C. ($+28^{\circ}.4$ Fahr.), but -10° C. ($+14^{\circ}$ Fahr.) is apparently too low. The maintenance of vitality of the transplanted periosteum is assisted by wrapping the part in a moist cloth. Brown-Séquard has found that the contractility of muscular tissue is restored thirteen hours after death by injection of arterial blood, and it is possible that the same means might be used to preserve the periosteal graft.

A heterotopic bone having been produced, its growth may be sometimes stimulated by moderate irritation. But the experiment is full of risk, and very apt to cause reabsorption rather than increased ossification.

Not only can heterotopic bones be developed by periosteal transplantation, but whole bones can be successfully grafted, as M. Ollier has experimentally proved in the case of rabbits, though he has failed with dogs. These grafted bones continue to grow in thickness, but do not increase in length. An exception is to be noted in the case of *white rats*, as shown by the experiments of Bert.

We have thus concluded our review of the first, or experimental portion of M. Ollier's great work. Our analysis has been necessarily very brief, and we have been compelled to pass very lightly, or even omit altogether, many points of great interest and practical value, which were, however, not absolutely essential to a comprehension of the object and scope of the main argument. We shall next proceed to a consideration of the clinical portion of M. Ollier's book, which occupies the second and larger volume of this most important contribution to surgery.

Fortunately (as our review has already extended to a considerable length), M. Ollier's second volume does not require, nor indeed would it admit of an analysis such as we have offered our readers of the first. The practice of subperiosteal surgery is, as yet, in its infancy; and our author's views are therefore confessedly, in a great many instances, theoretical, though perfectly reasonable, and probably hereafter to be confirmed by actual clinical observation.

M. Ollier writes for the future, as much, if not even more than for the present, and hence he has taken care by repeated observation and practice on the dead subject, to ascertain the best and most suitable procedure in the case of every subperiosteal operation which he has proposed. His book may thus be regarded as not only an admirable exposition of the present state of science as regards the subject of his labours, but as also an elaborate and satisfactory manual of operative subperiosteal surgery. Nor has our author limited himself to the bounds of his own special field of investigation; his work contains several distinct chapters, besides innumerable incidental remarks, upon the subject of bone-surgery in general.

Chapter First treats of necrosis in man, and of the regeneration of necrosed parts. The various forms of necrosis, and the antiquity of the fundamental principles of their treatment, are considered, with the process by which osseous regeneration is in such cases accomplished. The right time for surgical interference, and the means which may be employed to hasten the separation of sequestra are referred to, and we are pleased to observe that our author adheres, except in particular cases, to the time-honoured and most judicious rule, not to interfere until nature has done all that she is capable of accomplishing. Among the exceptions alluded to, are cases of necrosis of the upper and lower maxillæ, in which a positive injury is inflicted upon the patient by the presence of a constant source of infection and of systemic poisoning in the mouth, and in these cases the surgeon is therefore not only authorized to interfere before the separation of the sequestrum, but is positively reprehensible for neglecting to do so. With regard to the various plans proposed for hastening the loosening of sequestra, our author states that he has found all unsatisfactory, and some not free from danger.

Chapter Second considers the "abrasion, hollowing out (*évidement*), and cauterization of bones, or losses of substance which do not involve the length of the bone, and the method of bony reparation in such cases." The indications for each of these several modes of treatment are clearly pointed out, and their limits of applicability plainly defined. Our readers are doubtless aware, that the eminent Strasbourg surgeon, M. Sédillot, has lately given a fresh impetus to the practice of the process of hollowing-out diseased or dead portions of bone, and has given the operation the name of "*évidement*," by which it is here indicated. His learned and excellent treatise "*De l'évidement des os*," receives proper and respectful attention at the hands of M. Ollier, but the latter has, we think, conclusively shown that the process of *évidement* is only applicable to a limited number of cases, and not at all to those in which subperiosteal resection is especially indicated. Still the method of M. Sédillot is of great value, and our author has himself employed it with most gratifying results in several instances. It is especially useful as a supplementary operation after resection, as by this means the entire removal of the diseased structure can often be accomplished, without the sacrifice of such a large portion of the entire thickness of the bone as would otherwise be required.

In Chapter Third, the regeneration of bones by their periosteal sheaths is again brought under consideration; and cases adduced which prove the fact, in one, by demonstration on the living subject of the form of the new bone and the re-establishment of the limb's functions, and, in another instance, by the result of post-mortem examination, the patient having lived three years subsequently to the time of the operation.

The first case referred to is that of a young girl of fifteen, from whom M. Ollier removed by the subperiosteal process the upper half of the left humerus; the bone, in spite of several untoward occurrences, was completely regenerated (except, of course, the articular head) in less than a year; and the patient was able at the end of that time to return to her usual employment, a living monument not only of M. Ollier's surgical skill, but, what is more important, of the truth and practical applicability of his doctrines on the subject of subperiosteal surgery.

The other case is that of a young man upon whom our author performed excision of the whole thickness of the sternum, with resection of the costal cartilages; the patient dying of tuberculosis three years afterwards, an autopsy showed bony reproduction of the sternum, and ossification, more or less complete, of the fourth, sixth, and seventh costal cartilages on both sides, and of the third upon the left side.

Several cases are quoted from the writings of the older surgeons, such as White, Vigarous, Delamotte, and others, in which bony reproduction was observed; cases which at the time were considered merely as surgical curiosities, but which are now seen to have been the natural results of the normal physiological action of the periosteum. One fact which it is important to bear in mind in examining the results of cases reported by the older surgeons, is that while in some cases the separation of the periosteum is only to be accomplished by a tedious and painstaking process, in others it is almost impossible to avoid its preservation, the periosteum in such cases adhering more closely to the soft tissues than to the bones. Such is the state of affairs with the healthy bones of children, as well as in cases of inflammation, etc., in the adult.

Chapter Fourth takes up the subject of subperiosteal resections in general, giving rules for the operative procedure, and studying the conditions of osseous regeneration. We cannot pretend to follow our author into the minute directions which he lays down for the guidance of the surgeon in the case of each particular operation, but may say, in general terms, that the incisions should, as a rule, be single, in the direction of the axis of the limb, and as much as possible involving the intermuscular spaces rather than the muscles themselves. If it be necessary in any case to divide a muscle, it should be done in such a way as not to compromise its principal nerve. The periosteum is never to be detached with the cutting edge of a knife, but with the handle, or better still a kind of rasp, which the author describes and figures under the name of "*sonde-rugine*." Care should be taken to preserve the deep (osteogenetic) layer of the periosteum by pressing firmly against the bone in the process of separation. This part of the operation may generally be facilitated by previously dividing the bone with a chain-saw or otherwise at the middle of the portion to be removed. Great care must, of course, be exercised not to separate the periosteum from the surrounding soft tissues.

It is generally recommended, after a resection, to clip off with scissors all the fungous excrescences which are found on the surrounding fibrous structures; M. Ollier finds it better to allow them to remain, but he recommends that they should be freely touched with the actual or potential cauter (nitrate of silver). In these cases the wound must be kept open, and should be dressed with stimulating applications: in traumatic cases, however, the dressing should be of the simplest and most emollient character. The limb must, of course, be kept at rest after the operation,

with appropriate means of extension and support, to prevent undue shortening or other deformity.

After an ordinary resection, the rule is to place the resected parts in contact; in the subperiosteal operation this rule must be modified in view of the anticipated osseous reproduction. In a young subject, and especially in the upper extremity, the parts may be kept fully extended; but where there is reason to fear imperfect regeneration, and generally in the lower extremity (where more than in the upper it is necessary to avoid the risk of a false joint) it will be found better to approximate the resected extremities or even sometimes to place them in absolute contact.

Subperiosteal, as compared with ordinary resection, is a more difficult and much more tedious operation. This is however a matter of but slight importance since the general introduction of anæsthetics. Its results are more satisfactory, and there is reason to believe, though it cannot as yet be positively asserted, that it is an operation which is attended with less risk to life than is that of resection when the periosteum is not preserved.

Chapter Fifth treats of the general indications for subperiosteal resection, in hospital practice, civil (domestic) practice, and military practice respectively. The author remarks, and we think very justly, that it is a pity that hospital practice (as it nearly always does) should establish the rule for military (field) surgery, rather than country practice, to which the work of the army surgeon very often more nearly approximates. Thus certain operations, as for instance excisions of the knee-joint, are almost universally fatal in hospital practice, while in the healthy surroundings of country life they do very well. This particular operation is not of course generally suitable in military practice on account of the question of transportation; but with regard to other excisions and resections, and especially those of the upper extremity, our author thinks, and we quite agree with him, that a new field is opened to conservative military surgery by the subperiosteal mode of operation. Many cases, of course (shocking as it may appear), must and will still be amputated *to save time*; for, after an action, *time* is an element that demands the gravest consideration of the medical officer; but there are many other cases which do not require immediate attention, and it is for these especially that subperiosteal resections are particularly adapted. It is indeed in secondary operations that the best results may often be expected from the subperiosteal method, for in such cases the inflammatory action will have not only loosened and thickened the periosteum, but will have already prepared it for the most perfect exercise of its osteogenetic and reproductive powers.

In civil or hospital practice the cases of traumatic origin in which the question of resection is involved, are compound dislocations, and compound fractures where a fragment projects through the skin.

In the former, we entirely agree with M. Ollier, that primary subperiosteal resection should be invariably practised. In the latter, our author advises that where the fragment is bared of periosteum, and even if not, in the case of a child, the projecting portion should be resected previously to attempting reduction; we confess that we have rarely seen any advantage from this mode of proceeding in the cases in question, and should usually prefer, where amputation was not indicated, to trust the case to nature, reducing the fracture as completely as possible, by the aid of free incisions of the soft parts if necessary.

In cases of compound fracture involving the larger articulations, M. Ollier likewise recommends subperiosteal resection. He has done the operation himself in one case of compound fracture of the elbow-joint,

but the patient unfortunately died of pyæmia, so that the result, as regards bony reproduction, could not be determined. We confess that, with our present light, we should prefer, unless the fracture was very limited in extent, to resort to amputation, believing that by so doing we were affording our patient the best chance for preservation of life.

Cases of acute osteitis, of acute subperiosteal abscess, and even of acute osteomyelitis, when confined to the diaphysis of a bone, can often be successfully treated by the lesser operations of scraping, canterization or *évidement*, and even sometimes without any operation at all; when, however, the disease attacks an epiphysis, and the neighboring joint becomes involved, the case is more serious, and resection, or if more than one joint be involved, amputation must often eventually be resorted to. But even in these cases, the operation should not be employed until all ordinary modes of treatment have failed; for, thanks to the labours of Bonnet and others, the prognosis of suppurative arthritis is not now considered so uniformly unfavorable as it was formerly.

In neoplastic formations of bone, whether malignant or otherwise, subperiosteal resection should be avoided; here the preservation of the periosteum is at best of but doubtful utility, and must often prove positively injurious by reproducing the disease; hence in these cases the rule must still be, as formerly, total excision or amputation, according to the nature of the bone affected.

There is another class of cases where subperiosteal resection may sometimes be usefully employed, viz., where, the operation is required as a preliminary to the removal of deep-seated tumours, as for instance in the maxillary sinus.

Chapter Sixth treats of the subperiosteal resection and ablation of the bones of the head. Sundry interesting cases are given in which the upper and lower jaws or portions of them have been severally removed, but no reference is made to the very important case communicated by Dr. William Hunt, of this city, to the Philadelphia College of Physicians, and published in the number of this Journal for April, 1865 (p. 353), and January, 1866 (p. 163). This case, as well as that of Dr. Charles S. Boker (see *Am. Journ. Med. Sci.* for April, 1865, p. 555), either operation being for phosphorus disease, seems to us to prove both the possibility and the propriety of removal of the lower jaw being effected *without external incision*.

M. Ollier seems not to have been acquainted with either of these cases, for he bases his objection to the operation without cutaneous wound upon the *extreme difficulty* of the procedure, stating, indeed, that the operation is practicable upon the cadaver, but should not be attempted upon the living subject. Not only do Dr. Hunt's and Dr. Boker's cases show that the operation is far more easy than supposed by M. Ollier, but we may add that the bony regeneration in Dr. Hunt's patient was more complete than it seems to have been in most if not all of the cases which our author details in the chapter under consideration.

We do not propose to follow M. Ollier in his remarks upon subperiosteal resection as applied to each separate portion of the human frame; suffice it to say that he has practised this method with greater or less success upon the clavicle, scapula, ribs, pelvic bones, humerus, ulna, tibia, fibula, and bones of the hand and foot. Minute and careful directions are given for the operative procedure as applied to each bone, and illustrative cases from his own practice and that of others fully detailed, the results conscientiously stated, and justly and reasonably appreciated.

The same plan is adopted, in Chapters Tenth to Twelfth, for the subpe-

riosteal resections of the joints. Our author has operated in this way upon the shoulder, elbow, and ankle-joints, and generally with very gratifying results. Excision of the hip he has not performed at all, and in resections of the knee he has not attempted to obtain bony regeneration, preferring to place the cut surfaces of the femur and tibia in contact, and even to unite them by suture, with a view to obtaining bony ankylosis.

In his thirteenth chapter, M. Ollier treats of "some accidents in cases of fracture, due to exuberant or defective callus." Under the first heading is narrated an extremely interesting case, with which (as it has been extensively quoted by other journals from the *Gazette Hebdomadaire*, in which it first appeared) many of our readers are doubtless already acquainted. In this case the radial nerve was, after a fracture of the humerus, compressed between a projecting point of bone, and a canal which was formed around it by an excess of callus; great pain, and afterwards complete paralysis resulting from the accident. M. Ollier, six months after the occurrence of the injury, cut down upon the part, and with a chisel and mallet formed a wide groove in the callus, and removing the offending point of bone, brought the wound together; thus leaving the nerve completely protected by a bony wall, which at the same time did not compress it in any part. The wound soon healed, and in a year the nerve had completely regained its normal power, the patient being able to use his hand in every way, though it was still slightly weaker than its fellow.

With regard to the operation of subperiosteal resection in cases of ununited fracture, M. Ollier insists upon the importance of suturing the resected portions of bone themselves, but attributes no advantage to the suture of the periosteum. Our readers will observe that this is precisely the plan which has been so successfully adopted in this country by Dr. Henry J. Bigelow, of Boston. [See No. of this Journal for Oct. 1867, p. 507.]

Chapter Fourteenth treats of periosteal and bony grafts in the human subject. Our author upon one occasion transplanted a strip of periosteum obtained from the tibia to the forehead, as a preliminary to the operation of rhinoplasty; the result was, however, not sufficiently encouraging to tempt him to repeat the proceeding. The graft had apparently become entirely gangrenous, and it was only in tearing it away with forceps, that the screams of the patient, and a few drops of blood, showed that it had actually contracted adhesions at some points.

An account is quoted from Percy, of two attempts made by that distinguished surgeon to supply a loss of substance in gunshot fractures of the tibia, by the introduction of pieces of *beef bone*: the attempt, it is needless to say, resulting in complete failure.

A good, but somewhat apocryphal story is also quoted from Job à Meckrem, of a soldier, who losing by a sabre wound a considerable portion of his skull, had the deficiency supplied from the head of a dog, which was immolated for the occasion. The cure (so the story goes) was perfect, but the matter unfortunately coming to the ears of the patient's father confessor, absolution was withheld until the surgeon's dirty work had been undone, the foul fragment cast out again, and the patient eventually submitted to a more Christian mode of treatment.

Chapter Fifteenth treats of osteoplasty in general, and of its two varieties, the direct or osseous, and the indirect or periosteal. The principal applications of these proceedings are in cases of rhinoplastic and uranoplastic operations. Langenbeck, after an operation of periosteal rhino-

plasty, demonstrated the formation of new bone by exsecting a piece and placing it in the field of a microscope. M. Ollier has not made the direct examination, and has only been able in one of five cases to satisfy himself that a true bone formation had taken place. The details of this case are given, and the appearances before and after the operation represented by a plate. In Dr. Bigelow's case, it will be remembered, the result was completely unsuccessful.

Chapter Sixteenth and last treats of "preliminary osteotomy," a new operation for naso-pharyngean polypus, and of amputations with a periosteal flap. The new operation seems to be exceedingly ingenious, and, judging from the reported cases in which it has been practised, very successful; but as it is not very often required, we do not think it worth while to occupy our limited space with its description, preferring to refer those of our readers who may be interested in the matter to M. Ollier's volume itself.

With regard to the preservation of a periosteal flap in amputations, though our author first suggested the practice, he is now by no means convinced of its utility. An exception is however to be made in the case of the tibia, where, by the adoption of this plan, M. Ollier thinks the surgeon can avoid the perforation of the anterior flap by the tibial spine, which is so often observed after the operation as ordinarily performed.

Two appendices conclude the volume, one giving the details of three observations (by Coutavoz, Vigarous, and White respectively), which were only alluded to in the main part of the work, and the other furnishing later reports of the condition of several patients whose cases were not terminated when the book was placed in the printer's hands.

We have thus completed our review of this magnificent result of M. Ollier's labours, and, in taking leave of the work, cannot but express the opinion, that not only the profession but mankind at large owe him no inconsiderable debt of gratitude for his most valuable contributions to the science and art of surgery. There are some slight inaccuracies in his book, which will doubtless be corrected in a subsequent edition; thus, on page 207 (Vol. II.) we are told in the third, sixth, and ninth lines respectively, that the same patient was fifty-seven, fifty-four, and fifty-one years old. If we were to indicate a fault, it would be that the work is rather too much spun out; there are a good many repetitions, and a good many matters which though sufficiently interesting in themselves, do not strike us as particularly pertinent to the subject under discussion. We fear that the length of the volumes will stand in the way of their general circulation, at least in countries other than the author's own; for not only is the cost of so elaborate a work a matter of consideration with most doctors, but the perusal of a thousand large pages in a foreign language, is a task which by many will be approached with misgiving, if not altogether declined.

M. Ollier's style we have found perspicuous, and, usually, sufficiently elegant: he has, however, as we have already indicated, not learned that in which Pope tells us even Dryden was deficient—

"The greatest art of all—the art to blot."

Although not free from misprints, these volumes, both as to press-work and paper, reflect great credit upon MM. Masson, the publishers; and the nine plates and forty-five wood-cuts, while characterized by the usual French artistic elegance, are also remarkable for being executed with perhaps even more than the usual French accuracy.

J. A., Jr.

ART. XX.—*The Physiology and Pathology of the Mind.* By HENRY MAUDSLEY, M. D., London, Physician to the West London Hospital, Honorary Member of the Medico-Psychological Society of Paris; formerly Resident Physician of the Manchester Royal Lunatic Hospital, &c. New York: D. Appleton & Co., 1867.

THIS is a clever book; the author is a man of considerable talent, and an original thinker, but his thinking is far from being always judicious and safe. While he seems to demand rigid proof for all that he believes, he is really over-fond of speculation, is exceedingly attached to his own notions, and relies altogether too much on analogies, some of which have more of plausibility than strict truth. While he is very sceptical in regard to evidences advanced by those of opposite views, there is no hesitancy of belief in what may be marshalled in favour of his own doctrines. There is with this sometimes a sneer at prevalent opinions which is not at all becoming in a man of science.

From some notices that we have read of this book, we see that the expectation is indulged by some that it will make a complete overturn in the mode of studying mind; and we think, from some expressions here and there, that the author has this expectation also. He claims that the psychologists and metaphysicians, from Plato downward, have all gone wrong, and thinks that his method is the true one, and will set everything right. He casts great contempt upon metaphysics, as commonly pursued. He says of it that it "has never made any advance, but has only appeared in new garb;" that "its ill-defined terms and vague traditions, injuriously affecting our perceptions, and overruling our understanding, do not fail to confuse and falsify inferences;" and that "the results have answered to the absurdity of the method—for, after being in fashion for more than two thousand years, nothing has been established by it."

In his horror of this method, Dr. Maudsley ascribes certain bad results to it, for which plain common sense would readily find other causes; but a philosophy, so called, which is becoming somewhat prevalent just now, often discards common sense, and in its aim after the occult in its generalizations, utters mere absurdities. To this "metaphysical method, which exalted man so much over the rest of nature," he attributes "the superstitious reverence of the Greek, who would put to death a victorious general because he had left his dead unburied on the field of battle;" and he says that this "must have prevented Aristotle from anatomical examination of the structure of the human body." And he goes on to say:—

"Can we wonder, then, that the erroneous method was triumphant in Greece in the fourth century before Christ, when it is only recently in England. in the nineteenth century after Christ, that the barbarian's reverence for a dead body has permitted anatomical dissection, and when the finger-bone of a saint, or a rag of his clothing, is still treasured up, in some parts of the world, as a most precious relic, endued with miraculous virtues!"

What is Dr. Maudsley's remedy for all these evils? Why, simply a method of investigating mind which will not "exalt man so much over the rest of nature," but will bring him down to a proper level by recognizing mind as the mere product of material organization. This is to relieve man alike from his superstitious regard for relics and his reluctance to have the body, after death, serve the purposes of anatomical and medical science. He is quite encouraged by the indications that there is a prepa-

ration going on for the adoption of his method. He sees these in two facts. The first is, "the little favour in which metaphysics is held," it being "cultivated as a science only by those whose particular business it is to do so—who are engaged not in action, wherein the true balance of life is maintained, but in descanting in professorial chairs; or if by any others, by the ambitious youth who goes through an attack of metaphysics as a child goes through an attack of measles, getting happily an immunity from a similar affection for the rest of his life; or, lastly, by the untrained and immature intellects of those metaphysical dabblers who continue youths for life." The other fact is, the present great fondness for biography, for this "regards man as a concrete being," and "is in fact the application of positive science to human life." He concludes his remarks on this by saying:—

"No marvel, then, that biography forms so large a part of the literature of the day, and that novels, its more or less faithful mirrors, are in so great request. The instincts of mankind are here, as heretofore, in advance of systematic knowledge or method."

He makes the broad claim that both theology and jurisprudence have their beginning and basis in physiology or the study of the material organization. His language is:—

"When the theologist who occupies himself with the supersensuous, has said all that he has to say from his point of view; when the jurist, who represents those principles which the wisdom of society has established, has in turn exhaustively argued from his point of view, then the ultimate appeal, in a concrete case, must be to the physician, who deals with the bodily life. Through his ground only can the theologist and jurist pass to their departments; and they must accept their knowledge of it from him—on the foundation of facts which the faithful investigation of the bodily nature lays, must rest, if they are to rest safely, their systems."

But he justly fears that this will not be speedily acknowledged, and he therefore says:—

"Certainly it is not probable that this most desirable and inevitable result will come to pass in this day or generation; for it is not unknown how slowly the light of knowledge penetrates the thick fogs of ignorance, nor how furiously irritated prejudice opposes the gentle advent of truth."

But Dr. Maudsley takes courage by looking into the future, for he adds: "Happily it is certain, that in the mortality of man is the salvation of truth"—which we suppose means, that he expects, when the old advocates of present prevalent opinions have departed, his peculiar views will surely be adopted by those who are now preparing to take their places, but who are not as yet firmly settled in their opinions.

In concluding his first chapter, Dr. Maudsley goes into quite a rhapsody over "the gifted man of genius, who can often anticipate the slow results of systematic investigation, and who strikes out new paths," as distinguished from "the common herd of mortals who must plod on with patient humility in the old tracks."

He has much to say in disparagement of the "man of observation"—the *fact-hunter*, as he has sometimes been called—and looks upon him as a poor unreasoning mortal ever condemned to the narrowness of investigating "scattered facts." While "the rank and file of mankind" are thus occupied, however, their labours do not end in themselves, but they contribute to an occasional grand result, for by them "a condition of evolution is reached at which the genius starts forth." This agency of the mass in the

production of the geniuses that now and then appear seems to be very gratifying to our author, but he does not think it is so to the mass itself—"the rank and file" of diligent labourers are disposed to grumble about this grand combined result of their work.

"Not unamusing," says he, "though somewhat saddening, is it to witness the painful surprise of the man of observation, his jealous indignation and clamorous outcry, when the result at which he and his fellow-labourers have been so patiently, though blindly, working—when the genius-product of the century which he has helped to create starts into life—when the metamorphosis is completed; amusing, because the patient worker is supremely astonished at a result which, though preparing, he nowise foresaw; saddening, because individually he is annihilated, and all the toil in which he spent his strength is swallowed up in the product which, gathering up the different lines of investigation and thought, and giving to them a unity of development, now by exogenesis ensues."

We apprehend that the men of genius who have really accomplished much in the world have done a great deal at the patient, minute observation which Dr. Maudsley so greatly disparages as being fit only for "the rank and file," wherewith they make stepping-stones from which the geniuses can start forth on their airy flights. Such men of genius have much to do with "the tardy steps of induction," in common with "the ordinarily endowed mortals" of whom Dr. Maudsley speaks, who are governed, he says, by "rules and systems," while the genius "has an unconscious system of his own." It is not all flying and leaping with them, as many suppose. They do much hard work, and minute work too, though the world may know but little about it, as they see only their leaps and flights. Newton's discovery of gravitation seems to a gaping world like an impromptu flight to the stars, but a great deal of mental work did it cost him—aye, in the way of minute, careful observation—to prepare him for that flight.

We have no very exalted idea of the power or the usefulness of a genius that spends its efforts in ingenious speculation, in place of downright, honest, hard-working observation, weaving facts and suppositions together, and calling them theories. This Dr. Maudsley has done to a great extent in his book, and we deem it to be not merely a loss, a needless waste of power, but a real perversion, injuring both himself and those who may be deceived by his brilliant plausibilities.

We have no objection to supposition. We would not have the mind shut up to rigid facts. But we do object to calling conjectures facts, or to mingling them together confusedly, as is done in most of the so-called theories of the world. We would have all investigators in every department imitate the noble example of Newton, whose grand motto was, "I shall not mingle conjectures with certainties." *There is a sacredness in facts*, especially in general facts or established principles, and it is a real profanation to mingle our suppositions with them as if they were of the same value. The certainties should be kept with a sacred scrupulousness separate from conjectures, as was done by Newton, and the conjectures or suppositions should be strictly confined to their legitimate use as means of discovering further certainties. Facts should be considered as the treasures of science, to be carefully garnered and kept, but suppositions should be excluded from the storehouse.

There is more in common between ordinary labourers in science and those who attain eminence as discoverers than our author would have us believe. There is no such definite line between them as he draws. They have much the same spirit and aims, and rejoice in each other's successes; and it is only a few out of the "rank and file" who narrow their observa-

tion down to "scattered facts," and so cannot appreciate the generalizations of observers of greater reach of mind. To attribute this narrowness, as Dr. Maudsley does, to the great mass of observers, is a gross slander.

With this general disparagement of ordinary thinkers and observers by our author there is a disposition to speak contemptuously of those who hold prevalent opinions that are in opposition to the new opinions which he advances. They are set down as being in the "thick fogs of ignorance" and as the subjects of a "furiously irritated prejudice" in their opposition to what he calls "the gentle advent of new truth." Such unwarrantable language has been quite common of late with writers of the class to which Dr. Maudsley may be said to belong. Thus Professor Huxley, in his *Man's Place in Nature*, speaks of those who believe certain generally accepted doctrines to be established truths as disposed "to smother the investigating spirit under the feather-bed of respected and respectable tradition." And he adds, "but in every age one or two restless spirits, blessed with that constructive genius which can only build on a secure foundation, or cursed with the mere spirit of skepticism, are unable to follow in the well-worn and comfortable track of their forefathers and contemporaries, and, unmindful of thorns and stumbling-blocks, strike out into paths of their own." The restless spirits of Huxley and the rare geniuses of Maudsley are the same. They are minds that are not content to walk in well-worn tracks, or "wait for the tardy steps of induction," but with boldness and haste must strike out new paths, whether they lead to truth or not—paths that are deemed to be good simply because they are not "well worn" by the feet of those whom Maudsley calls "ordinarily endowed mortals." For ourselves, we see no great virtue or profit in forsaking old paths merely because they are "well worn," or in encountering "thorns and stumbling-blocks" to make new paths simply for the sake of having new ones. What we want is the truth, and it matters little whether the paths that lead to it be new or old, rough or well worn.

We recommend to these writers, to say nothing of modesty, the practice of a common courtesy at least towards those who differ from them. A sneer at old opinions furnishes no stable foundation for those that are new.

So much for the spirit of our author, and we now pass to the exposition and examination of his doctrines.

Let us inquire at the outset what are our means of learning all that can be known of mind. The sources of this knowledge are two. *First*, the study of mental phenomena in our own minds by consciousness and in the minds of others by observation. This study evolves the principles of psychology. *Second*, the examination of the mutual relations and influences of mind and the physical organization. Here we have mental physiology. The first is our chief source, but the second is indispensable in the exploration of many mental operations; and the two are to be made use of very largely together.

Dr. M. especially disparages consciousness as a source of evidence, and gives some singular reasons for this. One of them is that it is held that as the veracity of consciousness is to be relied upon only under certain rules, and as the lunatic has as decided a consciousness as the philosopher, and has his rules of judging by it, which rules must be of course wrong, therefore the rules of the philosopher must be wrong also. That this is a fair statement of his reasoning the reader may verify by turning to page 11 of the book. It is about as rational as it would be to say that because an organ is sometimes deranged in its function there are no principles to be

ascertained in regard to the performance of its healthy function—that because vision, for example, is sometimes perverted by disease it is useless to make out any laws or rules of vision.

That it may be seen that we do not in the least misrepresent our author we will quote a passage which absolutely rejects all evidence from self-consciousness or from the observation of the minds of others. “Mind, viewed in its scientific sense as a natural force, cannot be observed and handled and dealt with as a palpable object; like electricity, or gravity, or any other of the natural forces, it is appreciable only in the changes of matter, which are the conditions of its manifestation.” Observe the strong expression “*appreciable only in the changes of matter.*” Now what are the changes which give us our only knowledge of mind? He goes on to tell us, “Chemical analysis,” he says, “of the so-called extractives of nerve testifies to definite change or waste through functional activity; for there are found as products of a retrograde metamorphosis, lactic acid, kreatin, uric acid, probably also hypoxanthin, and, representing the fatty acids, formic and acetic acids.” He also speaks in the same connection of the increase of phosphates in the urine after prolonged mental exercise.

Is it indeed so? Are these changes all that can make mind “appreciable” to us? Are we narrowed up to this? Can we really know anything of mind if we look at these “conditions of its manifestation” alone? Is it thus that Dr. Maudsley studies the minds of his patients in the asylum? Would he have us satisfied with noting the lactic acid, kreatin, &c., as the products of metamorphosis of nerve tissue in mental action, and is this the amount of his so-called physiological observation of mind?

In investigating mind, in order to get at all that is “appreciable,” we must notice the whole range of the effects of “the marvellous energy which cannot be grasped and handled,” just as we do in the case of electricity. We are not to occupy ourselves alone with the material changes that occur in the brain in the production of thought, any more than we are in investigating galvanism or common electricity to look only at the changes in the apparatus that produces it. And while the effects are observed we are to inquire into all the elements that are concerned in producing them. There may be more in one case than in another. We have no right to conclude that because mind is like electricity in that it cannot be observed and handled and dealt with as a palpable object, that it is like it in other things—that, for example, “it is appreciable only in the changes of matter which are the conditions of its manifestation.” Its effects and some of the modes of its manifestation may prove that something more than changes of matter in the brain is to be invoked to account for them. This analogy, which our author has thus sought to make out between mind and electricity, is one of the many false analogies which throng in his book.

There is one passage in the statement on which we have been commenting, to which we call particular attention, not only because it is a most explicit expression of the author’s gross materialism, but also because there is in it acknowledged truth so connected with error as to make the error have a plausibility which it otherwise would not have. We do not say that this was designed, but such is the effect. The passage is this:—

“Few will now be found to deny that with each display of mental power there are correlative changes in the material substratum; that every phenomenon of mind is the result, as manifest energy, of some change, molecular, chemical, or vital, in the nervous elements of the brain.”

In the first part of this sentence there is a proposition to which no one

will object, for every physiologist believes that every mental action is attended by or has a relation to a change of some kind in the material organization; but the latter part, though it is so worded as to seem to be a mere paraphrase of the first part, really contains a new proposition. The correlative change is simply stated in the first part; but in the latter part the mental act is said to be "the result" of this change. Fairness demands that they should be plainly stated as two distinct propositions—the one as a truth which all believe, and the other as an opinion which the author entertains in opposition to the views of most physiologists—it touches in fact the very point on which materialists differ from others, and should have been so stated explicitly by our author.

Let us see definitely what this difference of opinion is. The doctrine generally taught by physiologists is well expressed by Dalton, thus:—

"When we say that the hemispheres are the seat of the intellectual faculties, of memory, reason, judgment, and the like, we do not mean that these faculties are, strictly speaking, located in the substance of the hemispheres, or that they belong directly to the matter of which the hemispheres are composed. The hemispherical ganglia are simply the instruments through which the intellectual powers manifest themselves, and which are accordingly necessary to their operation. If these instruments be imperfect in structure, or be damaged in any manner by violence or disease, the manifestations of intelligence are affected in a corresponding degree."

He believes of course that there is a spiritual entity in man, a conscious, responsible *ego*, that thinks and acts by means of the brain. So also Dr. Draper considers it the duty of the physiologist, "whenever the opportunity offers, to assert and to uphold the doctrine of the oneness, the immortality, the accountability of the soul," and he says that "as there is but one God in the universe, so there is but one spirit in man."

Our author and other materialists believe directly the opposite of all this.

"Instead of mind being," says Maudsley, "as assumed, a wondrous entity, the independent source of power and self-sufficient cause of causes, an honest observer proves incontestably that it is the most dependent of all the natural forces."

A word in passing upon the overstatement, amounting to caricature, of the prevalent opinions on this subject as expressed by Draper and Dalton. No one holds that the mind is "the independent source of power and self-sufficient cause of causes." It is believed by all physiologists that there is in the mind a certain degree and mode of dependence upon the physical organization, and Dr. Maudsley knows it. Why then should he misstate this belief, as he does persistently in this book? The difference between his doctrine and that which is commonly received is that he teaches that the dependence is entire, mind not being in any sense an entity, but a mere "*result*" of some change "in the nervous elements of the brain." With Maudsley mental action is nothing but cell-action—not action of mind in and by cells, but action of the cells themselves.

"Mental action," he says, "is as surely dependent on the nervous structure as the function of the liver confessedly is on the hepatic structure: that is the fundamental principle upon which the fabric of a mental science must rest."

There is no mistake about the meaning here. If there were any doubt about it from the use of the word surely instead of absolutely, the context shows that he considers the dependence absolute. He says that the cells of the brain have a like function with "the ganglionic nerve cells scattered

through the tissues of the organs." In a mental action we therefore see nothing but the performance of the function of cells. And the mental power of the cells is maintained by what they receive from the blood to maintain the waste occasioned by their action. In this way there is an "upward transformation of matter," or, in other words, a change of the blood by assimilation in the cells into a higher form of matter—such as can produce mental phenomena. With this transformation of matter there is "a correlative metamorphosis of force"—a new force being produced solely by the material change. Observe that our author makes the condition of thought to be absolutely physical, for he holds that "the maintenance of the equilibrium of nervous element"—by which he means the maintenance of the proper nutrition of the cells of the brain to supply the waste of their action—

"is the condition of latent thought—it is mind statical; the manifestation of thought implies the change or destruction of nervous element. The nerve-cell of the brain, it might in fact be said, represents statical thought, while thought represents dynamical nerve-cell, or, more properly, the energy of nerve-cell."

There is another thing stated in regard to this building up of thought-power in the cells by assimilation. Whenever there is waste of a cell in consequence of "the activity of an idea" the repair of the cell from the blood is "according to the mould or pattern of the particular idea." Whether he means that a single cell may evolve different ideas, and so needs a different kind of repair after each, or that each cell evolves its own particular idea, being especially moulded for it, we will not undertake to decide.

There is another thing in regard to this generation of thought which is very wonderful. It is the making of ideas out of sensations. It is done in this way: There are nervous centres for sensory perception, and other nervous centres, viz., the hemispheres of the brain, for ideational perception. Now "the impressions received by the sensory centres" may be passed "to the cells which are spread over the hemispheres, and there further fashioned into what are called *ideas* or *conceptions*." In other words, the cells in the hemispheres are moulds into which these impressions are cast, and they come out *ideas*. Thus "the formation of an idea is an organic evolution." The author thus speaks in another place more particularly of this moulding process, giving the cells, as you observe, a selecting power:—

"The cells of the cerebral ganglia do in reality *idealize* the sensory perceptions; grasping that which is essential in them, and suppressing or rejecting the unessential, they mould them by their plastic faculty into organic unity of an *idea*."

The difference in quality of the ideas of different persons we suppose is owing to a difference in the cells that mould them, though Dr. Maudsley says nothing on this point. He remarks in one place that "an idea may be definite, clear, and adequate, or it may be indefinite, obscure, and inadequate"—in the former case we suppose it is the product of a good mould, in the latter not.

Ideas being thus generated, it follows that their association is altogether physical, and Dr. Maudsley speaks of it as the result of the "anatomical connections" of the cells. The communications between two ideas, by which one suggests the other, is by "an anastomosing process" between the cells in which the ideas are moulded. And he says that "ideas are thus as much associated in the mind by physical necessity as are cause and effect in external nature."

But ideas that have been thus moulded in the cells and associated together by the anastomoses between the cells are remembered. How is this accounted for? Simply thus: After an idea has been moulded in a cell, and has been dismissed for the time, there is a something which "persists or is retained," and this "has been differently described as a residuum, or relic, or trace, or vestige, or again as potential, or latent, or dormant idea; and it is on the existence of such residua that memory depends." We remark in passing, that with all the transmitting of impressions, the moulding, the anastomosing, and the deposits of residua, we have a set of processes that are rather more complicated than we should suppose anything so fixed and definite as physical organization could effect. If such be the true account of mental operations we should think that incoherent ideas and confused memories would be even more common than we find them to be. So abundant must be the residua especially in persons of great memories, that the cells must be over-burdened with huddled-up deposits—order would be as impossible as in an old garret. Where there is incoherence either from natural deficiency or insanity, we suppose Dr. Maudsley would account for it by saying that the moulds are poor, the residua are not well packed, and the anastomoses are in a tangle.

But we have not yet arrived at the end of the wondrous powers of these cells. When we think that we have emotions we are mistaken. We as persons do not have emotions. It is all in these same cells. These "have a sensibility of their own to ideas, and the sensibility which thus declares the manner of their affection is what we call emotional." The emotion is absolutely a physical result, for "there are two elements which go to the production of an emotion—namely, the organic element and the external stimulus." That tells the whole story, according to our author. The moulded idea acts on the sensibility of the cell that moulds it, and thus generates the emotion.

And there are emotional affinities in these cells. The appetites and desires are merely such affinities. Where these exist there is in the cells an "attraction, impulse, or striving of organic element towards a favourable stimulus," and "the attraction is no less a physical necessity than the attraction of an acid for an alkali, of the needle to the pole, or of positive for negative electricity."

A very gross and degrading account, this, of our emotional nature! It is instinctively revolting to every one that is not bewildered by the dreams of a false philosophy. What! the noblest and most sacred emotions, love, desires after the pure and good, are these nothing but the products of organized matter! No true science can so degrade the higher nature of man.

With such views of mind everything in both intellect and character is made to depend upon the construction of the cells of the brain.

"Given," says Maudsley, "an ill-constituted or imperfectly developed brain at the time when the sexual appetite makes its appearance, and what is the result? None other than that which happens with the lower animals, where love is naked lust, and the sight of the female excites a desire that immediately issues in uncontrollable efforts for its gratification. Given, on the other hand, a well constituted and naturally developed brain, the sexual desire undergoes a complex development in consciousness; from its basis are evolved all those delicate, exalted, and beautiful feelings of love that constitute the store of the poet, and play so great a part in human happiness and human sorrow."

Observe that he is not stating an individual exceptional case at all, but he is speaking in general of emotions, appetites, and desires, as they are

generated physically, as he holds, in the cells of the brain. There can be no mistake about this, for after giving this illustration, he adds, "What is true of these particular desires is true of all our desires." We simply remark in regard to all this, that it is a matter of common observation that most of the conversion of physical love into "naked lust" comes from direct moral contamination, and in spite of all the good tendencies of "a well constituted and naturally developed brain." If Dr. Maudsley has not so observed, it is because his mind has been addled by his false theories.

In consonance with his other notions, Dr. Maudsley teaches that there is no freedom of will, or, in fact, that there is no such thing as what we commonly call the will. As is generally the case throughout the book, he here overstates the doctrines of those to whom he is opposed. He says, for example, that we must "get rid of the notion of an ideal will, unaffected by physical conditions," as if it were the prevalent doctrine of psychologists that it is wholly and at all times independent of these conditions, and that it is "allowed to tyrannize in the most despotic manner over the understanding." And he says in another place that "not a little windy nonsense has been written concerning its authority," which, to say the least, is not very complimentary to those with whom he differs. The common doctrine is, that the mind considers motives and facts freely in view of them—such consideration and action not being the operations of organic cells, but of a mind that is connected with, and in some sense dependent upon these cells in its action. But our author would have it that the dependence is entire, and that there is no such thing as freedom of the mind in choice and will. He says that the will is simply "the higher mode of energy of the nerve-element," and an "insensibly organized result of varying value." The following language expresses as sheer materialism as possibly could be expressed on this subject.

"If the final reaction after deliberation, which we call will, is like other modes of reaction of nerve-element previously described, a resultant of a certain molecular change in a definitely constituted nerve-centre, than all the *design* exhibited in any given act of will, must, like the design displayed in the function of the spinal cells, or the cells of the sensory centres, be a physical result of a particular intimate constitution or organization of nervous matter."

According to Dr. Maudsley, there are multitudes of wills in every brain, for he says that "there are in reality as many centres of volitional reaction in the brain as there are centres of idea." And from what has been already stated, there must be according to his theory, at least as many "centres of idea" as there are cells—for if the cells "mould" the ideas, there cannot be more than one cell engaged in moulding any one idea, and it may mould many in succession.

If there be such a multitude of centres of ideas and volitions, it would seem that there could be no such thing as what may be called the *ego*. But it appears that there is one, though exactly what it is we cannot divine, from Dr. Maudsley's definition, probably because we are not sufficiently indoctrinated in the modes of thought and language of his school of thinkers. He says:—

"What we call the *ego*, is in reality an abstraction, in which are contained the residua of all former feelings, thoughts, volitions—a combination which is continually becoming more and more complex."

What he means by the word abstraction in this connection, we do not know; and we doubt whether our author can tell us. To be consistent

with what he has already said, he ought to maintain that the thinking man, or the mind of man, is simply the sum of what he calls "the residua of all former feelings, thoughts, volitions;" and this is not only "a combination which is continually becoming more complex," but as there "are as many centres of volitional action as there are centres of idea," there can be no central power in this combination, and without this there can be nothing which can properly be called the *ego*. And if there be no *ego*, there is no such thing as identity, and therefore Dr. Maudsley rejects the "so-called identity" of the *ego*, and speaks of revolutions and transformations in character as showing that it does not exist, the consciousness of its existence being, in his view, no evidence at all to the contrary. Such doctrines strike at the root of all human responsibility. If there be no *ego*, there is no responsibility—a mass of cells, each producing thoughts, feelings, volitions, is not responsible. And if our author will have it that there is an *ego*, in contradiction of what he has all along taught, then if it have no identity, the *ego* of last year, last month, last week, or yesterday, had no responsibility connected with that of to-day. Nay more, it is even a matter of moments, for in the changes continually occurring in the cells, the sum which makes the *ego* of Dr. Maudsley changes somewhat from moment to moment, and may at some moment encounter one of those great transformations of which he speaks as showing that there is no identity.

Such is the gross materialism of Dr. Maudsley. But perhaps he will claim that we misrepresent him, for there are many passages in his book that are totally inconsistent with his materialistic doctrines; and he calls the famous proposition of Cabanis crude, and criticizes it at some length. He desires, at least, to make out his materialism to be more refined than that of the outspoken Cabanis. We cannot, however, see how his differs essentially, for he says "every phenomenon of mind is the result, as manifest energy, of some change—molecular, chemical, or vital—in the nervous elements of the brain." Did Cabanis mean anything more than this? Did he mean to say that thought is a material fluid like bile? Not at all. He meant merely that thought is a product of the organism of the brain, just as bile is of the organism of the liver; and he would agree with Maudsley's statement as only another version of his doctrine, granting that the change in the organism which produces thought is either "chemical, molecular, or vital."

We have said that Dr. Maudsley's book abounds in analogies, which, though plausible, are fallacies. Here is one of them. In speaking of our arriving at "the general conception, or the, so to speak, *essential idea* of mind, he says:—

"By observation of the mechanism and appropriate abstraction we get the *essential idea* of the steam-engine—a fundamental idea of it, which, as our ultimate generalization, expresses its very nature as such—contains, as Coleridge would have said, 'the inmost principles of its possibility as a steam-engine.' So likewise with regard to the manifold mental phenomena; by observation of them, and abstraction from the particular, we get the general conception or the *essential idea* of mind."

But he says that in the "confusion in philosophy" which psychological reasoning has introduced, this "metaphysical abstraction has been made into a spiritual entity, and a complete barrier thereby interposed in the way of positive investigation." The analogy is a correct one, if the collective phenomena of mind are the mere products of a conglomeration of

cells, as Maudsley teaches, for then it is mere machinery—vital in its character, and exceedingly delicate in structure—and yet machinery that does all the thinking, evolves all the mind-power, that “highest natural force,” as our author calls it. But what says an actual observation of the phenomena of mind, made in a common-sense way, without regard to any preconceived theory? Does it reveal to us in mind simply a combination of machinery without any responsible central power? It does not require a philosopher with his abstractions to make the distinction to which we allude. It is made instinctively by every one—alike by philosophers like Dr. Maudsley and by those whom he looks down upon as “ordinarily endowed mortals,” and even those who have reached the utmost limit of human ignorance and degradation. If either Dr. Maudsley or a Bushman be struck by any one, he does not think of the blow as coming from a part of a machine, but from the man as a thinking, feeling, willing being. He, an *ego*, is attacked by another *ego*. The act is to him that of a real “spiritual entity,” not made from “a metaphysical abstraction.” There is no such oneness in the “essential idea of a steam-engine” as in that of a person.

We have said that there are many inconsistencies in the book. The author does not strictly adhere to the doctrines which he so minutely carries out. This is partly from carelessness, but partly from the very necessity of the case, for he cannot always escape from the use of common language; the necessity for its use presses upon him, and he gets along as well as he can with it. “The fashioning of the will,” says he, in one place, “is the fashioning of the character; and that can be done only indirectly by fashioning the circumstances which determine the manner of its formation. But however formed, it is the character which determines what the judgment shall decide to be most eligible, the inclination prompt as most desirable, and the will effect.” There is seldom so much concentrated truth as in these passages, and at the same time it is not to be mistaken. Maudsley forsakes his petty cells, and talks sense.

There are many other parts and points of this author which we had intended to touch upon, but sickness has cut our duties short. W. H.

[There is a sad interest connected with the above review. The sickness of its author, alluded to at its conclusion, speedily terminated the life of our esteemed contributor and valued friend. The concluding sentence was the last the author ever penned. This is not the place to give expression to our grief at the irreparable loss which the profession and the whole community, no less than ourselves, have sustained, or to dwell on the virtues of the deceased, his great abilities and the useful purposes to which he devoted them. Some abler pen, we trust, will perform that duty.—EDITOR.]

ART. XXI.—*Mémoires et Bulletins de la Société Médico-Chirurgicale des Hôpitaux et Hospices de Bordeaux*. Tome 1^{er}. Royal 8vo. pp. 474. Paris: Victor Masson et Fils. Bordeaux: Chaumas-Gayet, 1866.
Memoirs and Reports of the Medico-Chirurgical Society of the Hospitals and Infirmarys of Bordeaux. Vol. I., 1866.

THIS handsome book contains between forty and fifty papers of a practical nature, contributed by thirty-six members of the society from which the volume has emanated, together with abstracts of the discussions which

followed the reading of the papers at the meetings at which they were presented. In this respect the volume before us differs from the various collections of transactions and proceedings which are modelled after those of the Royal Medico-Chirurgical Society of London. The plan pursued by our Bordeaux brethren has, we think, decided advantages, as it not unfrequently happens that the chief interest attaching to a paper consists, not so much in anything that itself contains, as in the facts and opinions called forth during its subsequent discussion.

As many if not most of our readers will probably not have access to the original, we propose to lay before them a short account of the principal matters which occupied the attention of the Bordeaux Society during the year 1866, and in so doing shall naturally confine ourselves chiefly to a summary of the papers presented.

The first subject which demands our attention is an account of an *epidemic of measles* which prevailed in the garrison of Bordeaux during the months of November and December, 1865. M. Larivière, who is the author of the memoir under consideration, states that for eight months the military hospital under his charge had been entirely free from cases of measles, when, on November 17th, no less than five cases were received in one day, and in the ensuing week nineteen additional cases, the last having been received on the 16th of December. The whole number of cases observed was therefore twenty-four, and of these but one died, a small mortality when we remember the ravages occasionally produced by camp-measles among our volunteers during the late rebellion. The fatal case was one of great severity, the patient dying with complete trismus, about five hours after his admission to hospital. In more than half of the cases (14 out of 24) but one day elapsed between the commencement of indisposition and the appearance of the eruption; the latter was generally not very well marked, and lasted but from twenty-four to forty-eight hours. In none of the cases were the catarrhal symptoms troublesome, and in one case the course of the fever seemed to exercise a favourable influence upon a chronic pleuritic effusion.

The treatment employed was chiefly of an expectant character, care being taken to obviate constipation by occasional doses of castor oil. In the course of the discussion which followed the reading of this paper it was further stated that in the majority of the cases observed, the sore-throat had been so intense as to suggest the angina of scarlet fever.

The second paper, by M. Labat, gives the history of a *successful operation in a severe case of vesico-vaginal fistula*. M. Labat gives first a sketch of the various attempts to remedy this most distressing condition, previous to the period when Dr. Sims introduced those improvements in the operative procedure, which have rendered success the rule instead of as formerly the rare exception. The method preferred by M. Labat is not, however, that of Dr. Sims (which is here called the "American method"), but that practised by Mr. Collis, of Dublin, with the modifications of M. Duboué, of Pau. This method our author denominates the method of Gerdy, as that surgeon practised it as long ago as 1841; and the idea of this procedure may even be found, we are told, in the writings of Dieffenbach. The chief peculiarity of this method consists in splitting the lips of the vesico-vaginal aperture into two layers, which are then respectively reflected so as to form spur-like projections into both bladder and vagina; the extent of raw surface approximated by this method being of course greater than could be obtained in any other way. An additional advantage

is that in case of non-union, as no tissue has been removed, the size of the original fistula is not increased. In bringing the edges together M. Labat employs a fine needle carrying a double silk thread which in turn serves to introduce the silver wire; the latter material being preferred by M. Labat to the hempen thread of Mr. Collis. Two wires are tightened at the same time, their ends being passed through a doubly perforated leaden button on either side of the fistula, and twisted four or five times to prevent their slipping. The after-treatment of the case does not differ materially from that ordinarily employed. M. Labat prefers to remove the sutures about the twelfth or thirteenth day. M. Labat does not consider it necessary to employ any anæsthetic in cases of vesico-vaginal fistula, and places his patients in a crouching position, resting on their hands and knees.

This paper, which we have necessarily referred to very briefly, is quite elaborate, and well merits the attention of those especially interested in the subject. We are pleased to see that M. Labat is not unacquainted with the labours of Prof. Pancoast and other American writers in this department of surgery.

A pathological specimen, showing an *abscess of the larynx with consecutive œdema of the glottis* occurring in a patient convalescent from typhoid fever was exhibited by M. Baudrimont, on behalf of M. Lacaussade.

An interesting discussion followed, by which it appeared that this complication, which has been principally studied by the German pathologists, and is known by them under the name of laryngo-typhus, may begin with ulceration of the laryngeal mucous membrane, with inflammation of the submucous cellular tissue, or with necrosis of the laryngeal cartilages. (Edema of the glottis may follow upon either form, and generally proves fatal. Tracheotomy alone offers a chance of recovery, having proved successful in about 40 per cent. of the cases in which it has been practised (10 cases out of 26), while 57 cases which were treated without operation gave only two recoveries ($3\frac{1}{2}$ per cent.).

Two papers follow, by M. Brochard and M. Le Barillier respectively, to which we may refer together as they treat of the same subject, to wit, the causes of the great mortality of new-born children in France. Our readers are doubtless aware that the attention of our professional brethren in that country is greatly occupied at the present time with this important subject. M. Brochard estimates that of 20,000 children annually sent out of Paris in the charge of hired nurses, not less than 15,000 perish. The saying of the mayor of a certain locality is quoted, that the cemetery of his district was "paved with little Parisians." Previous to the year 1852, all that was necessary to insure the reception of an infant in a foundling hospital was to deposit it in a receptacle for the purpose and to summon the attendant to take charge of the helpless stranger. Under this system many feeble and even sick infants were saved by prompt care and attention; while under the present arrangement, by which many formalities have to be gone through to obtain the child's admission, as many as fifteen days often elapse during which the infant is insufficiently clothed and nourished, and constantly exposed to the inclemency of the weather: thus though the suppression of the "*tours*" may have advanced the cause of morality, it has certainly caused the death of many children who might otherwise have been saved.

M. Bitot contributes a description of a new method of treating luxations of the acromial end of the clavicle. His apparatus consists essentially in a more or less elastic arrangement pressing upon the displaced clavicle and acromion process of the scapula, and deriving its point of support from

attachments before and behind to a perineal band. In the case where this apparatus was employed a perfect cure resulted after sixty days; but, as remarked by M. Labat in the course of the discussion which followed the reading of M. Bitot's paper, the use of the perineal band and the requisite immobility of the trunk would render this mode of treatment, in most cases, irksome in the extreme. We have been in the habit of treating this form of injury by means of long and broad strips of adhesive plaster secured to the front and back of the chest, and making pressure through a firm compress placed directly over the projecting end of the clavicle, the arm being fixed to the side by a modification of the bandage known as the "third roller of Desault."

The history of a case of *progressive muscular atrophy*, under the care of M. Lacaussade, was related by M. Bandrimont. The disease had existed for more than fourteen years, and appeared to have been caused by exposure and insufficient nourishment. From the account of the *post-mortem* examination we extract the following: The left upper extremity was the part most affected, though the whole body was considerably emaciated. The supra and infra-spinatus muscles, the teres major and teres minor, the deltoid, and the coraco-brachialis were represented by mere membranes of a whitish hue. The biceps was reduced to a pair of whitish cords about the thickness of a goose's feather. The triceps had still some fibres not entirely degenerated. The brachial artery and vein were normal; compared with the size of muscles, the nerves of the brachial plexus seemed enormous. The forearm was less affected than the parts above the elbow. A microscopic examination, which was made by M. Azam, showed all grades of muscular degeneration, even to the extremest limit. In the forearm the fibres were in process of transformation, the striæ having disappeared but the myolemma still existing; the striated tissue was replaced by connective tissue infiltrated with globules of fat. The upper arm and shoulder presented no trace of muscular structure; the myolemma had entirely disappeared, and nothing was perceptible but a confused lace-work of connective tissue containing large numbers of fatty globules.

The *brain* presented nothing abnormal. The spinal cord, at the level of the brachial plexus presented a slight grayish coloration of the whole right side; the left antero lateral column was rather smaller than the right; there was also a slight difference in the dimensions of the anterior roots on the two sides. Microscopically, no pathological change was apparent in the cord, nor yet in its roots. Similarly, to the naked eye, the *ganglions of the great sympathetic* appeared rather paler and smaller upon the left side than upon the right, but under the microscope, no abnormal change was detected.

Inspection of the abdominal viscera showed a stricture of the pylorus, with great thickening of the gastric walls at the pyloric extremity of the stomach; there was complete atrophy of the spleen, its weight being little more than one-fourth of that in the normal condition, while the left kidney was one-third smaller than that of the right side. The supra-renal capsules were altered in a manner which is not very definitely indicated.

The lungs were much congested posteriorly, and somewhat emphysematous at the summit. The heart was very small, and reduced to nearly one-half its normal weight; the muscular structure of the heart was partly degenerated, and presented numerous globules of fat when examined with the microscope.

In the discussion which followed the reading of this paper, M. Azam

expressed the opinion that the origin of progressive muscular atrophy was to be found in the condition of the vaso-motor nerves, and referred to the observations of Messrs. Mitchell, Morehouse, and Keen, of this city, as to the alteration of the skin in cases of nerve wounds, an alteration which M. Bitot stated that he had observed in cases of muscular atrophy.

The next paper is by M. Azam, and gives an account of a case of pseudarthrosis of the femur of two years' standing, successfully treated by electro-puncturation after the previous failure of injections of liquor ammoniæ, and simple acupuncture.

The cure was effected through the formation of a thick fibrous callus around the seat of fracture, which permitted the patient to walk without a crutch, though slight lateral mobility still persisted. As the treatment caused extensive and deep suppuration around the seat of fracture, lasting through several months, we cannot but consider the plan adopted as not so free from risk as represented by M. Azam. We believe that in a case such as that under consideration, where there is reason to suppose that a portion of muscular tissue has intervened between the fragments of bone, the operation of sub-periosteal resection, as practised by Dr. H. J. Bigelow, and noticed in the number of this Journal for October, 1867, promises better than any other mode of treatment.

A specimen of the curious parasite, known as *Filaria medinensis*, was exhibited by M. Denucé, and a history of the patient from whom it was derived read at the same time. This worm, which finds its habitation in the subcutaneous areolar tissue, is very common in Africa and in certain parts of Asia. In Bokhara the operation of extraction is skilfully practised by barbers. Should the operator be in too great haste, there is a risk of the worm breaking, an accident which is apt to be followed by considerable inflammation of the part containing the remaining fragment.

M. Lacaze for M. H. Gintrac read the account of a patient, who, for about seven months, suffered from a cyst in the epigastric region, recovery following a spontaneous opening of the cyst into the cavity of the stomach. This case would have been more interesting had it been possible to determine the seat and origin of the cystic formation.

M. Marx exhibited a patient whom he supposed to be affected with bronzed skin, and disease of the supra-renal capsules, complicated with a condition of the liver, which he was uncertain whether to call simple hypertrophy or a fatty tumour of that viscus. From the discussion which followed M. Marx's observations, we infer that the majority of the Society were not disposed to agree with his diagnosis, but believed that the patient's skin was not of the true bronze hue of Addison's disease, but rather jaundiced, a condition amply accounted for by the diseased condition of the liver.

An elaborate paper follows by M. Bitot, giving an account of a patient who suffered from a tuberculous tumour in the left side of the cerebellum, as well as from tuberculous disease of both lungs. The post-mortem appearances are accurately described, and the causes of the various symptoms observed during life thoroughly discussed.

M. Bitot's conclusions, which we quote in full, are as follows:—

"1. Tubercle developed in the white substance of the cerebellum may acquire considerable dimensions without giving any sign of its existence;

"2. The disease does not manifest itself until the moment when it reaches the excitable organs in the neighbourhood (divers parts of the isthmus of the brain and the nerves which proceed therefrom);

"3. Consequently, any other mechanical cause, of slow course, situated in the same region, might and should produce effects analogous, if not identical;

"4. In a practical point of view, it is above all important to make an early diagnosis from strumous disease (*tumeur blanche*) of the occipital bone, and of the two first cervical vertebrae.

"5. The employment of opium in putting a stop to reflex action and the phenomena of contraction, can aid greatly in establishing a differential diagnosis;

"6. Revulsives should be laid aside, not only as useless, but even as injurious."

Two cases are narrated by M. Oré, one of arterial wound of the thigh, with threatened formation of a false aneurism, cured by mechanical compression; the other, a case of incised wound of the hand, several of the smaller joints being opened; in this case a cure was effected by the employment of careful, but *infrequent* dressings, care being taken to exclude the air as much as possible. As remarked by M. Labat in the discussion which followed M. Oré's remarks, the result of the first case must be looked upon as exceptional, and as not, therefore, establishing a rule of practice; while the result in the second case can scarcely be considered unusual, as even the most severe injuries of the hand often do well under conservative treatment.

We next come to an interesting paper by M. Sentex, giving the history of a case of traumatic rupture of the bladder, which proved fatal on the fourth day. The injury was received from a fall on the pavement. The abdomen was much distended by fluid in the peritoneal cavity; but the patient experienced very little pain. After death the rupture was found to be in the upper part of the bladder. There was not much evidence of peritoneal inflammation. The paper terminates with some interesting critical and historical remarks upon what our German brethren would call the casuistry of vesical rupture. Our readers will find in the proceedings of the Philadelphia Pathological Society, published in the number of this Journal for October, 1867, an interesting case of this nature reported by Dr. James V. Ingham, with some valuable practical remarks by Dr. W. S. Forbes.

M. De Fleury related a case of ascites of uncertain origin, which recovered spontaneously after seven tapplings. A discussion followed, which seems to us to have rather obscured than illustrated the nature of M. De Fleury's case. That gentleman was disposed to think the ascitic collection of fluid to have been due solely to an impoverished state of the patient's blood, rejecting as a possible cause the condition of the heart (which was affected with chronic endocarditis and pericardial effusion), because there had been no swelling of the lower extremities. His critics, on the other hand, seem to have unanimously agreed that his explanation of the case was incorrect, without being able to suggest a more plausible theory than that which they condemned.

The next paper, with the report of the discussion which followed its reading, constitutes the longest and one of the most important contributions to surgery which the volume contains. The text was the history of a patient whom M. Labat treated for anthrax or carbuncle by means of arrows of chloride of zinc (*cautérisation en flèches*), the treatment having been begun about the twentieth day of the disease, and the patient leaving the hospital rather more than three months later, cured as regards the carbuncle, and numerous secondary abscesses which were developed in various parts of the body, but with a persistence of glycosuria, which was first manifested shortly before the patient left the hospital, and which persisted in spite of treatment at the time of the report, nearly three months

subsequently. A full analysis of M. Labat's excellent memoir, and of the different facts and opposing views elicited during the ensuing discussion, would occupy an undue amount of space, and we must therefore content ourselves with a statement of the conclusions which M. Labat considers warrantable from the premises laid down, briefly indicating afterwards the various modifications of treatment proposed by the gentlemen who took part in the subsequent debate. M. Labat's conclusions are as follows:—

"1. The gravity of carbuncle is, other things being equal, generally proportionate to its extent; it is purulent absorption which, in the large majority of cases, becomes the cause of death.

"2. The surgical treatment of the first period (period of inflammatory induration) should consist in multiple incisions, radiating from the centre to the circumference, deep, and embracing the whole thickness and whole extent of the diseased tissue.

"3. In the second period (period of resolution and cleaning), arrows of Canquoin's paste, surrounding the tumour, and traversing it in one or more directions.

"4. Infrequent dressings with pledgets of lint, impregnated with alcohol, and sprinkled with an absorbent and detergative powder, until the complete cleaning of the wound.

"5. Alcoholic tincture of aconite (administered internally), if there is fear of putrid infection; ergotine, if there is danger of purulent absorption.

"6. Lastly, an important condition—the best alimentation possible.

"With these precautions, a cure will generally be obtained."

M. Denucé, after making the radiating incisions practised by M. Labat, employs a thorough cauterization with the perchloride of iron.

M. Bitot rejects the radiating incisions, and prefers passing a knife subcutaneously over the whole extent of the carbuncle, making a kind of flap at the lowest part to permit the exit of pus; he also recommends circumscribing the tumour with applications of Vienna paste.

The controversy between these two gentlemen and M. Labat was prolonged through three meetings of the Society. The report of their discussions is interesting, and in some respects instructive, though it is but right to say that the views expressed with regard to the conditions known as pyæmia, septicæmia, &c., are given in exceedingly loose terms, and manifest a total disregard or ignorance of the labours of Savory and other authors, who have written upon the subject within the last few years. It seems to us also that too much stress is laid upon the so-called *inflammatory* nature of carbuncle. The fact is that carbuncle is a disease of great depression; and good food, stimulants, and tonics, form a most essential part of whatever plan of treatment may be adopted. We have ourselves treated a severe case of double carbuncle in an aged person by means of *pressure* (with strips of adhesive plaster), without either incisions or caustics, and with the most gratifying results. The patient recovered more quickly, and with much less suffering, than have those on whom we have practised the usual crucial incision; and without pretending to say that pressure should be the universal treatment for carbuncle, we cannot help thinking that in many cases the knife and caustics are, at any rate, superfluous.

We may congratulate the gentlemen who conducted this discussion upon the courteous tone which was throughout maintained; a most edifying contrast to that which characterizes many of the discussions in some of the Parisian medical societies.

Appropriately following the subject of anthrax or carbuncle, we have next a case of "*Pustule Maligne*," communicated by M. Brochard, with a dis-

discussion of the question whether this disease be ever spontaneous, or whether it be always produced by inoculation. It may be here remarked, that the French term *charbon*, employed in these papers, does not indicate, as might be supposed, what we term *carbuncle*, but is restricted to the epizootic affection, which, by inoculation, produces the *malignant pustule*. M. Brochard held that the disease in question was never of spontaneous origin, but that a source of contagion might always be traced either in the application to the surface of a *virus*, or possibly in the inhalation of a *miasma*, to both of which he gives the epithet "*charbonneux*."

A long paper by M. Delmas, entitled, *Note pour servir à l'Histoire de l'Hydrothérapie*, we have found neither very interesting nor very practical. One passage, however, quoted from a paper by M. Andrieux, we may reproduce as embodying truths not altogether inapplicable in this country, even if not quite so much to the purpose as among the peasantry of France:—

"You blame your fictitious correspondent," says M. Andrieux, "because he considers it for the advantage of Hydrotherapeutics for it to be introduced into the domain of domestic habits. This blame is misplaced. In fact, to many people, and even to certain doctors, the trials of hydrotherapeutic treatment seem to equal the tortures of the Inquisition. Allow the public to wash itself every day with cold water, and it will no longer be afraid of hydrotherapeutics, and will no longer hesitate to apply to it for treatment when necessary. Let the public use cold water hygienically, and you will see it protected from a swarm of diseases which it drags through the office of the physician," &c.

In corroboration of the above statement as to the horror of cold, or even warm water prevailing among some classes of the community, we may mention that it is not an unfrequent occurrence at our city hospitals, for patients, and even those who have been anxious to gain admittance, to ask to be discharged, rather than undergo the ordeal of taking the bath required as a preliminary upon the entrance of all whose physical condition will permit its administration.

The history of a patient cured of popliteal aneurism by a new mode of compression, is contributed by M. Oré, and woodcuts given of the instrument employed. The instrument consists essentially of a narrow and deep compress, applied over the vessel to be operated upon, and held in place by an elastic band; thus a certain amount of pressure is constantly maintained, while, by the application of a single finger, the patient can increase the force used, so as to totally arrest the arterial current. The apparatus described is sufficiently ingenious, but in considering its value it must be borne in mind that the femoral artery, of all others, is perhaps that in which pressure can be most satisfactorily employed, and is, at the same time, that which has furnished the best results for the ligature in the treatment of aneurism. The important element of time is not clearly given in M. Oré's observations, but we learn that while the patient was put under treatment in September, a relapse ensued upon exertion during the following February.

M. Sentex read a report of ten cases in which Dr. Richardson's method of producing local anæsthesia was employed. The results were more or less satisfactory in all except one where the actual canterbury was applied; in this case the patient's sensibility seemed to be scarcely if at all diminished by the ether spray.

A case of successful lithotomy by the bilateral method in a child of four years, communicated by M. Segay, presents no points of special interest.

A case of resection of the great sciatic nerve for traumatic neuralgia, in

which the patient continued well after three years and a half (by M. Azam) is, on the other hand, of the highest interest as being the only case on record in which the cure is known to have persisted for so long a time. This case had already been reported to the Société de Chirurgie in June, 1864, and an account of it may be found in the *Bulletins* of that Society. As an instance of the usually unsatisfactory nature of operations of this kind, we may refer our readers to the very remarkable case published by Dr. J. C. Nott, in his interesting "Contributions to Bone and Nerve Surgery," of which a notice appeared in the number of this Journal for April, 1866. One important remark of M. Azam is, that from an analysis of the cases of resection of nervous trunks, which he has had the opportunity of studying, it appears that the operation has only been successful in neuralgias of traumatic origin; in those of idiopathic nature the proceeding having been almost always, if not always, followed by failure.

A case of mercurial eczema (*hydrargyrie*) following the external use of mercury, communicated by M. Marx, comes next in order. It is somewhat remarkable that while this affection not unfrequently follows the external use of the remedy in question, it almost never results from the internal administration of mercury. It is of great importance that the eruption should be attributed to its true origin, and that the mercurial treatment should be immediately suspended, as otherwise there is a risk of transforming a temporary and comparatively trivial indisposition into a state of permanent and sometimes dangerous cachexia. M. Marx refers to several published cases, analogous to his own, and among others to one which appeared in the number of this Journal for July, 1851.

M. Labat contributes a case of successful amputation of the thigh in which ergotine was administered as a prophylactic against pyæmia. M. Labat's rules for securing a favourable result in thigh amputations, he summarizes as follows:—

"A large anterior flap, circular incision posteriorly, isolation of the artery before deligation, the maintenance of a drain at the angle of the wound, simple and easy dressings, and ergotine internally, administered during the first ten or twelve days."

M. Labat states that by this plan he has had a series of thirteen successful amputations, nine being of the thigh; and the principal share in the result he attributes to the employment of ergotine. The use of this drug was first suggested to him by observing the very small amount of suppuration in cases of gangrene resulting from eating spured rye. Its *modus operandi* is supposed by M. Labat to depend on its possessing the power of increasing the plasticity of the blood.

M. Labat's paper is interesting, and though thirteen successful cases of amputation can scarcely be considered to demonstrate the excellence of his plan, still we think ergotine certainly worthy of a trial in cases where there is reason to anticipate pyæmic complications. We must protest against one statement of M. Labat's, viz: that painlessness of a stump on the second and third days after an amputation is a sure sign of the death of the part (p. 289). We must also object to the *ex-cathedra* manner in which the whole question of pyæmia is disposed of, the labours of all modern pathologists, from Virchow down, being totally ignored. It is a very easy explanation of pyæmia to say that it is the absorption of pus into the blood, but we maintain that it is an explanation which no one at the present day has any right to give; nor should the subject be treated of at all without at least some slight reference to the investigations of the modern writers of both Germany and England.

An interesting paper by M. de Fleury, founded on a case of hemorrhagic diathesis (*hémophylie*), comes next in order. From this paper, and from the report of the discussion which followed its presentation, we learn that in the majority of cases, accompanying the curious tendency to hemorrhage, there is a disposition to attacks of an arthritic nature. There is no doubt an alteration in the composition of the blood, though the nature of such alteration is yet undetermined. Strangely enough there is no lack of fibrin (though the contrary is stated by M. Tardieu) as two analyses of the blood from a fatal case showed the proportion to be 2.640 for 1000 parts. The urine always shows a diminution of the amounts of urea and uric acid, and this, together with the fact that in several cases recovery has followed the use of sulphate of soda, would seem to show that these substances are probably accumulated in the patient's blood, the salt of soda apparently producing its effect by a process of double decomposition.

A communication from M. Duboué (of Pau) giving the histories of two patients affected with chronic pleurisy with discharge of purulent matter through the bronchial tubes, follows, with a critical report upon the same by M. H. Gintrac. The principal remedy employed by M. Duboué, and that to which he is disposed chiefly to ascribe the successful result, was tannin. This medicine he does not propose for administration in all cases of pleuritic effusion, but thinks would prove of benefit in any case where an opening existed into the bronchi or through the thoracic parietes, whether spontaneously produced or artificially made, as in the operation of paracentesis.

M. Guépin gave a summary of eight cases of strabismus in which he had operated, five having resulted in success, and three in failure. The want of success in these latter was due to improper after-treatment on the part of the patients themselves or their parents. M. Guépin recommends that in cases where both eyes are to be operated upon, a longer or shorter interval should intervene between the operations. This we think a bad plan, believing it to be much better to make all the use of the knife that will be required at one sitting.

A very interesting case of arteritis, with partial obliteration of the tibial and peroneal vessels by the process of thrombosis, was communicated by M. Larivière. Dry gangrene followed, and the patient finally recovered after submitting to amputation of the leg, just below the knee. An almost diagnostic sign of arterial obstruction is the sudden and intense pain felt in the parts affected. This is often associated with marked cutaneous hyperæsthesia, as noted in several cases of ligature of the femoral artery which we reported to the Pathological Society of Philadelphia during the session of 1867 (see number of this Journal for July, 1867, p. 147), and as observed in the very remarkable case of successful ligation of the innominate, carotid, and vertebral arteries, published by Dr. A. W. Smyth, of New Orleans (see number of this Journal for July, 1866, p. 280).

A paper by M. Didiot, of Marseilles, on the advantages to be derived from the use of the microscope in the diagnosis of tumours, would appear, in the present state of surgery, to be almost superfluous. It serves, however, to furnish the details of three cases, two of which are of considerable interest; these were, one a case of fibro-plastic tumour of the lumbar region, which had been at first mistaken for Pott's disease of the spine, and the other a case of fibro-plastic tumour of the axilla, which presented some of the appearances of a simple glandular enlargement. Excision was successfully employed in both of these cases, the former, however, having required a second operation for a return of the morbid growth *in situ*.

Two papers of great value, but not of general interest to the profession,

in this country at least, are "Researches on the System of Public Assistance given to Unmarried Mothers (*filles-mères*)," by M. Sous, and "On the Influence of the Mortality of Nurslings and Foundlings on the Diminution of the Population in France," by M. Brochard. From the latter paper we learn the startling fact that there are annually in France *over one hundred thousand* deaths of infants less than a year old, due to neglect and want of proper attention. With regard to the influence of artificial substitutes for human milk in increasing the mortality among infants, the statements of several gentlemen who have had ample means of forming a correct opinion on the subject are appended. Thus Dr. Dimbarre, who for fifteen years was inspector of foundlings for the district of the Pyrenees, asserts that he has always found that the use of the nursing-bottle has increased the mortality, in spite of all care, to *two or three times* what it was when the children were brought up at the breast. M. de Saint-Laumer, from another district, states that in 1851, on account of complaints made against the nurses in his department, twenty infants, selected for their health and vigour, were sent to another district, to be brought up by hand; of these twenty, eighteen died within a few months. Finally, M. Bethmann, superintendent of the Children's Asylum at Bordeaux, states that "of 31 infants brought up upon the nursing-bottle in the one district of Peugnac, 25 died in 1862 and 5 in 1863."

A short paper by M. Pallas follows, describing several instruments which he has devised for applying electricity with a view of preventing pain in the extraction of teeth. The peculiarity of these instruments consists in an arrangement by which the continuity of the current is established by pressure on a spring concealed in the structure of the instrument itself. We are pleased to see that M. Labat, in the remarks which he made after the reading of M. Pallas' paper, gives the credit of the introduction of general anæsthesia, as well as of this form of local anæsthesia, to this country, instead of to England, as is too apt to be done by our transatlantic brethren. M. Labat further states that he has not been so successful with Dr. Richardson's ether-spray in operating upon the mouth as he has where the external skin was concerned.

We have next an exhaustive and extremely interesting memoir by M. Dudon, upon perforation of the perineum occurring during childbirth. This is a very rare accident, as is evidenced by the fact that M. Dudon, after long and careful research, has succeeded in collecting but fourteen cases, his own included. When the perforation is uncomplicated by rupture of the rectal wall, it is a comparatively slight affair, a good cure generally resulting from the efforts of nature alone. Even if the sphincter be torn through, though the case becomes more tedious and the patient's discomfort is greatly increased, still a recovery may generally be anticipated.

A critical review of the new edition of the French *Codex*, by M. Jeannel, comes next, and appears to us both just and pertinent. As it is, however, of little or no practical interest to our readers in this country, we pass it over, quoting merely the writer's sentiment upon the diminution of the amount of classical studies required of apothecaries at the present day in France, compared with that which was formerly thought necessary:—

"Strange progress! which consists in excusing young men from serious and persevering studies—from those liberal studies which exact generosity of feeling at the same time that they develop the most noble faculties of the mind. Fatal progress! which extends the surface by lowering the level."

Following M. Jeannel's review, we come to the history of a case of

"Splenic Leucocythemia," communicated by M. Marx. A great augmentation of the proportion of white corpuscles in the blood, and decided hypertrophy of both liver and spleen, are the most marked features of this uniformly fatal affection. It is, says M. Marx, to be distinguished from the splenic hypertrophy of malarial fever by the fact that in this latter disease the number of white corpuscles is not always much increased. Again, it is to be distinguished from "lymphatic leucocythemia," in which the lymphatic glands are enlarged instead of the spleen, and in which, with an increase of the number of the ordinary white corpuscles, there is also an increase of those analogous to lymph corpuscles. The views of Virchow, Bennett, and others, as to the etiology of the affection, are briefly referred to. On the suggestion of M. Delmas, M. Marx concluded to use the douche (applied over the region of the spleen), which has been found of great benefit in the cases of splenic engorgement which accompany the fevers of warm climates. The result of this experiment is of course not reported in the present volume.

M. Labat exhibited an ingenious little instrument which he had devised for the extraction of foreign bodies from the external auditory meatus. It consists of two curette blades, which are to be introduced separately (like the blades of the ordinary obstetric forceps), and the stems then passed through a tube, which, by being pressed downwards, fixes the blades tightly upon the foreign body; a handle is then attached, which serves to keep the instrument from slipping, and at the same time to furnish the necessary means of traction.

M. Labat likewise offered some remarks upon the statistics of syphilis as prevailing at Bordeaux, recommending that, as an additional means of checking the extension of this malady, a heavy penalty should be exacted of the keepers of houses of prostitution whenever they should be convicted of harbouring inmates who were diseased.

The last original paper in our volume is an account of a case of *External Luxation of the Foot by Rotation Outwards*, communicated by M. Sentex. The name adopted for this injury is that given by M. Huguier, and the writer believes it to differ essentially from all of the forms of dislocation described by Malgaigne. In the case in question, as in the majority of those recorded, there was a fracture of the lower portion of the fibula.

A very good *compte-rendu* or summary of the proceedings during the year, by the general secretary, M. Azam, and a moderately good index, complete the first volume of the proceedings of the new society. We have endeavoured to give our readers a fair picture of the subjects which have occupied the attention of our Bordeaux brethren during the year 1866, and, in so doing, have necessarily confined ourselves principally to analysis, without indulging in much criticism. Looking at the volume as a whole, we think that it gives promise of a series of much interest and practical importance.

We have been particularly pleased to find the members of the Medico-Chirurgical Society of Bordeaux not unacquainted with, and not unwilling to give due credit to the labours and investigations of our own countrymen. We could wish that the volume before us should find a place at least in every public medical library throughout the United States, and we shall be gratified if the analysis which we have offered our readers of its varied and highly practical contents, shall induce such as may feel interested in the several subjects discussed to have recourse to the volume itself, which we can assure them will not disappoint their most sanguine expectations.

J. A., JR.

ART. XXII.—*St. George's Hospital Reports*. Edited by JOHN W. OGLE, M. D., F. R. C. P., and TIMOTHY HOLMES, F. R. C. S. Vol. II. 1867. 8vo. pp. 485. London: John Churchill & Sons.

THIS volume of Reports contains twenty-two articles, illustrated by eight woodcuts.

Art. I. (being No. 2 of Contributions to the Surgery of the Head) is *On Exostoses of the Skull*, by PRESCOTT G. HEWETT, Surgeon to the Hospital.—The author presents a *résumé* of the subject, without, however, adding anything to what was previously known; he does not enter into the genesis and histology of these tumours, nor into a microscopical examination of their connections with the surrounding bone, but confines himself chiefly to the question of practice. The paper consists mainly of an enumeration of specimens in different museums, and of the relations of operations performed by others in such cases, but the author alludes only in a cursory way to the results of his own experience. The remarks on operative interference are brief but judicious, while medical treatment is declared to be inoperative, as far as the exostosis is concerned, even in those cases in which the tumour is quite superficial, although it may be required to allay the hyperæmia of surrounding parts. Two instances are related in which the application of caustics was successful, and the tumours sloughed off, after operations had been attempted in vain for their removal.

Art. II. *Clinical Cases of Insanity*. By GEORGE FIELDING BLANDFORD, M. D., Lecturer on Psychological Medicine at the Medical School.—In this short but instructive article Dr. B. relates eight cases, three of which refer to patients who spontaneously recovered after attacks of melancholic insanity of seven, six, and five years' duration respectively—in illustration of the principle, that where "great depression is the prominent feature, it appears that the delusions attending it will vanish if the feeling itself passes away; and we learn from such cases once more the lesson, that the greater the emotional disturbance in any insane person, the more favourable is the prognosis."

The remaining five cases are examples of *Mania Transitoria*, in three entirely unconnected with epilepsy, the diagnosis of such cases from ordinary acute mania is shown to be very difficult at the outset—the general points are thus stated:—

"It is likely to be transient if its invasion is very sudden, and if there is a definite and sufficient mental cause, as a shock or fright. It is likely to be prolonged, if its approach has been very insidious and gradual, and if there is no assignable cause. If the bodily condition is much affected, if the tongue is brown and dry, the urine scanty and high coloured, and if the bowels can hardly be moved by the strongest purgatives, it is not likely to pass off in a few days. If on the other hand the bowels are easily and freely opened, if the urine is copious and pale, and the tongue pale and moist, we may hope that it will soon be over, especially if there is extreme violence, bearing no proportion to this slight bodily disturbance. And our decision will be aided by the advent of sleep if this occurs in a day or two. If the disorder is to run the ordinary course of acute mania sound and long sleep is not to be expected at so early a period."

Caution in action in such cases is strenuously enforced, as "two or three days will solve the question for us;" and also against the *nimia deligentia medicæ*. Quiet judicious nursing, gentleness on the part of nurses and friends are of the greatest importance; the good effects of purgatives is men-

tioned, as is also shown by Dr. Forbes Winslow. The remark that counter-irritation should be applied further off than the shaven scalp, or even the nape of the neck should be especially borne in mind in the treatment of these cases. Preference is wisely given to digitalis and henbane, to packing in a wet sheet, warm bath and cold to the head, and such measures as a means of removing the excitement, and procuring sleep; while removal to an asylum should be delayed as long as possible, for nothing is so likely to convert one of these short attacks into a prolonged and obstinate mania as such a removal.

Art. III. *Diseases of Artisans*.—No. 1. *The Sheffield File-Cutter's Disease*. By JOHN CHARLES HALL, M. D.—The author gives a description of the method in which files are made, from which it is shown that this disease is a general lead poisoning, caused by the introduction of finely divided metallic lead, arising from the bed of lead on which the file rests while being cut. The blue line around the gums is shown to exist for a very long time, eighteen or twenty years after its formation, although the patient may be entirely removed from the possibility of any further absorption of the metal. In the treatment of lead colic the magnesian draught, with additional sulphuric acid, and chloric ether is recommended, to be continued for some length of time. Iodide of potassium is discarded as of no value. For the "dropped wrist," a splint, rest, counter-irritation, and galvanism are used, with the remark that the purgative as above should be continued for some time before galvanism is applied; and also before the use of strychnia is commenced.

The tincture of *nux vomica*, sulphates of quinia and iron, and the tincture of the sesquichloride of iron are mentioned as the most reliable tonics. General hygienic rules must of course be attended to.

The prevention of this lead poisoning is shown to be an easy affair, by the use of sulphuric acid lemonade, by cleanliness, often washing the mouth, bathing, washing before meals, changing the clothes after work, combing and washing the hair, an ori-nasal respirator, and such means as prevent the entrance of the lead into the system.

Art. IV. *On Certain Epileptic Phenomena*. By EDWARD FOX, M. D.—The author commences by stating that the division of epileptiform attacks into centric and eccentric is itself a fallacy. The attack may be eccentric at first, but it afterwards becomes centric. Of 112 cases there was aura only in 10. In many cases where there is no aura, there is a premonitory warning of the attack. This warning may be of very different kinds, but most of them are evidently due to local arterial spasm, either of the retinal artery, the anterior and middle cerebral arteries, or of those arteries on one side only, or of the vessels of the medulla oblongata; and the nature of the warning sensations seems to vary according as the loss of blood-supply occurs first in the anterior or posterior portions of the encephalon.

The occurrence of epilepsy without loss of consciousness may depend on the portion of brain affected by arterial spasm. The nervous centres that rule motion may be affected, while the external convolutions are free, just as we see many cases of the reverse.

In *le petit mal* the loss of consciousness is the prominent symptom, generally, however, accompanied by paralysis of the limbs—in this form there is no laryngismus or trachelismus, and the mental impairment is more rapid than in the grave attack. The fit and the mental deficiency depend on the same cause; the former being the immediate result of the arterial spasm; the latter, the consequence of the mal-nutrition of the brain from

the constant repetition of this spasm. In *le petit mal* the brain suffers more from the more frequent occurrence of the attack. He sums up with the following points :—

“1. In very many cases what the patient calls a warning of the fit is in reality the commencement of the fit itself.”

“2. Epileptiform convulsions may occur without any loss of consciousness, when there is no evidence of organic disease or of eccentric irritation.

“3. The brain suffers more rapidly in the various forms of *le petit mal* than in any other variety of epilepsy.

“4. Arterial spasm is the proximate cause of most of the epileptic phenomena including clonic convulsions.

“5. Spasm of the arteries of the cerebral lobes is the cause of much of the mental impairment met with in this disease.

“6. Lucid intervals may occur dependent on a more constant blood-supply in the brain.

“7. The pathological appearances met with in the brains of epileptics are the effects of the attacks.

“8. The blood is the true seat of the lesion.

“9. Treatment should be directed to the improvement of the blood, and the relaxation of arterial spasm.”

If a morbid alteration of the blood itself, *i. e.*, of its chemical constitution, were the direct cause of the irritation of the sympathetic filaments, producing spasm of the arteries, as stated by this author, would not the attack be more prolonged in its character as that morbid material would have to be decomposed or expelled before relaxation of the arteries could occur? Does not this disease consist more in disturbance of force than in alteration of matter?

Bromide of potassium is spoken of as having been given in dose of 20 grains; it may require to be given in much larger doses, as in doses of one drachm every three hours for three or four doses, before its sedative effects are fully developed.

ART. V. *Encephaloid Disease of a retained Testicle, with Remarks, including a Summary of twelve other similar cases.* By G. F. HODGSON.—The subject of this case, when about 25 years of age, in 1857, injured his right testicle—which had been arrested in its descent, and was still retained in the groin—as he was lifting a heavy weight from the ground; and for the next two years suffered no inconvenience except on two occasions from a similar cause. In September, 1863, the swelling was increased to the size of a fist, and was a hydro-sarcocele in the groin. It was tapped, and six ounces of fluid drawn off. Attempts were made to discuss it for the next six months, when Mr. Paget pronounced it malignant, and advised its removal, which was objected to. In September, 1865, the tumour had increased considerably, and continued to do so until July, 1866, when the patient died. The post-mortem disclosed extensive encephaloid degeneration.

The author remarks :—

“The summary of exactly a dozen cases is such, I think, as to *deter* us from operating when the disease has attained to any considerable size, especially if the peritoneum would have to be opened. * * * If, however, I should again see a case early I *would* operate.”

With regard to the propriety of removing a testicle retained in the groin, he says :—

“As these testicles can, as a rule, be of no use—as they are from the arrest of their development very prone to cancer—as if attacked by inflammation they would be much more painfully affected than if in the scrotum—could the gland

neither be brought into the scrotum, nor pushed into the belly—if it gave any trouble in exercise it had better be removed."

ART. VI. *Thermometrical Observations in Typhoid Fever.* By REGINALD THOMPSON, M.D., Medical Registrar of the Hospital.—The researches of Dr. Wunderlich on the thermometry of disease have induced many observers to examine the subject, with a general confirmation of his results. Dr. Thompson sums up his observations as follow :—

"1. The thermometer points out a distinction between typhoid fever and some other diseases which often simulate it, viz., acute granular kidney, meningitis, peritonitis.

"2. The thermograph of typhoid differs from that of other fevers, and especially in the mode of favourable termination.

"3. An additional distinction between typhoid and typhus fevers is thus given.

"4. It is possible by its use to appreciate intestinal lesions before they are recognized by the ordinary symptoms."

ART. VII. *Aphasia and Agraphia.* By WILLIAM OGLE, M.D., Lecturer on Physiology at the Medical School.—In this paper the author proceeds to examine how far the pathological records of the hospitals harmonize with the opinion that the faculty of articulate speech is inseparably connected with the posterior third of the inferior or third frontal convolution of the left hemisphere of the brain. MM. Dax and Broca gradually developed the location of this faculty in this particular spot, which declaration has since been the subject of considerable discussion. It may be briefly stated that this convolution forms the upper boundary of the fissure of Sylvius, and runs in longitudinal direction towards the transverse frontal convolution which forms the anterior margin of the furrow of Rolando; this last nearly corresponding to the suture between the frontal and parietal bones.

With speech is intimately connected writing, the two forming the chief means by which man communicates with his fellows, and it may be readily supposed that the centres governing these two actions are not far removed from one another.

The loss of speech from mental causes may consist either in a forgetfulness of words, aphasia amnemonica, or in a forgetfulness how to say them, aphasia atactica. In the former prompting enables the patient to go on, while in the latter it is no longer of the slightest use to him. The same division may be made with agraphia, and we have agraphia amnemonica, and agraphia atactica; in the first the patient can form letters, but he confuses them together without any connection with the word intended; in the latter the power of writing letters is entirely lost. Aphasia and agraphia are usually combined together; but this is shown not always to be the case.

Twenty-five cases are thus recorded, and in all of them there was disease of the left hemisphere; in some of them softening of the brain matter in the region of Broca, as the spot described above is called; in others plugging of the middle cerebral artery of the left side. In the only one case in which the right middle cerebral artery was obstructed the faculty of speech was retained in its integrity, while in no case in which speech was seriously injured, was the left side of the brain in this region found sound.

In cases in which, with paralysis of the left side, there was also aphasia, Dr. Ogle thinks the latter may depend on disease of the pons Varolii, while in the very rare cases in which, with a diseased right hemisphere, aphasia

was present, the left hemisphere remaining sound, it may be assumed that the corresponding part of the right hemisphere had been developed into the organ of speech in the same way as we occasionally see the left hand developed into use instead of the right.

"It would appear then that all the parts of the left hemisphere are not concerned in this matter, nor all parts of the anterior lobe. What part then is? The eight cases of embolism of the left middle cerebral artery show that it is some part supplied with nutriment from that source. The rest of the cases harmonize with this conclusion. Such a part, with much besides, is the posterior part of the third frontal convolution. * * * At any rate these cases would seem to show that the organs of language are, if not in the exact position which has been assigned to them, in close proximity to it."

The article will well repay an attentive perusal.

Art. VIII. *Reports of Cases of Nervous Disease, Delirium.* By C. HANDFIELD JONES, M. B., Cantab., F. R. S.—This paper contains the histories of eight cases, intended especially to illustrate the symptom of delirium. In the first case it was mainly the result of mental anxiety, and after the exhibition of a few doses of antim. potass. tart. gr. ss, with some morphia and henbane, the attack subsided. The second was a case of mania transitoria, which passed off in a few days. The third was hysterical delirium which was quieted by chloroform inhalation. The fourth was epileptic. The fifth, slight delirium in a very debilitated subject following epistaxis. The sixth, was the case of a stout man physically overworked, whose mind had suffered from a severe shock six years before, and from the effects of which it had never quite recovered. He was treated with strychnia, nitric acid and valerian, and other tonics, and recovered in a short time. Cases seven and eight were both fatal cases, the former a complication with fever and tuberculosis, the latter with convulsions. The author closes with remarking that delirium and convulsions are allied conditions; in both there is undue excitability and mobility. They may be taken as a type of irritation, which condition has the following features:—

"The part affected is *unduly impressionable*, is less tolerant of its natural stimuli than in health; its *functional energy is lowered*, it is less capable of doing its appointed work, but is much more readily set in action. At the same time, its *nutritive actions are deranged*, its secretions (if it be a secreting organ) are often increased, or morbidly changed, while its vessels participating in the general enfeeblement, no longer duly regulate the blood supply, or restrain their contents from exuding in excessive quantity."

Art. IX. *On Loose Cartilages in the Knee-Joint.* By BERNARD BROADHURST, Assistant Surgeon to the Hospital, and Lecturer on Orthopædic Surgery.—The subject of this memoir, while playing football, missed the ball and fell; on attempting to rise, he was unable to walk at all, and six weeks after Mr. B. detected a loose cartilage in the knee-joint, which he immediately removed; subcutaneous extraction was first attempted, but as it remained held by a small band of ligament, Mr. B. cut down on it and removed it. No synovia was lost. The patient recovered with the full use of the limb in fourteen days.

Art. X. *Infecting and Non-infecting Chancres. Remarks on some Cases, with especial reference to the Means of Diagnosis between the two forms of Disease.* By EDGCOMBE VENNING.—The author of this paper accepts the view of there being two forms of primary syphilitic sores; one infecting, *i. e.*, followed by constitutional symptoms; the other non-infect-

ing, that is, only a local disease, and not followed by such symptoms. In four years, forty-nine cases of chancre were admitted into the Regimental Hospital of the 1st Life Guards, of which nineteen were diagnosed as infecting, and thirty as non-infecting, and treated accordingly. Of these latter four cases are related; the first had secondary symptoms, there having been two sores, one infecting, and one non-infecting; the infecting sore was not discovered at first. In the second, the primary disease was followed by serofulous disease of the testes, tubercular affection of the lungs, and serofulous disease of the knee. In the third, constitutional symptoms followed a sore which did not present the symptoms of an infecting chancre; while in the fourth, although all the symptoms of an infecting chancre were present, no secondary symptoms followed it—although it was treated as a non-infecting chancre.

In conclusion the author remarks, "The result of my own observation seems to prove, that the infecting form is always attended with the amygdaloid enlargement of the glands in the groin."

Art. XI. *On Naso-Pharyngeal Polypi*. By THOMAS F. PICK, Curator of the Pathological Museum.—The author in this paper discusses the merits of five different methods of removing these dangerous growths; First, the plan adopted by M. Nélaton, of removing the tumour by the mouth. Second, that of M. Flaubert, by removing the whole superior maxillary, and the modifications of this plan; that by M. Maisonneuve, of removing only a part of that bone; that by Prof. Langenbeck, of simply displacing a portion of that bone, and after the removal of the tumour replacing it and allowing it to unite; and that by M. Roux, of displacing the whole bone, and its subsequent replacement. Third, the method of laying open the cavity of the nose in various ways. Fourth, the removal by ligature; and fifth, causing sloughing of the tumour from the passage of a galvanic current. The author gives the preference to the second and third plans of operation—the fifth method being left still open for the results of a more extended experience.

Art. XII. *On Croup and Diphtheria*. By J. WARRINGTON HOWARD.—The author commences by denying the identity of these two diseases, laying down the following propositions:—

1. Diphtheria is an acute specific disease; croup is a local inflammation.
2. Diphtheria is contagious; croup is not.
3. Diphtheria is epidemic; croup is not.
4. Diphtheria is an asthenic disease; croup is a sthenic inflammation.
5. The exudation in diphtheria attacks first the fauces and larynx; but in croup the trachea.
6. Diphtheria attacks persons of all ages; croup is a disease of children.
7. There is usually albuminuria in diphtheria; but not in croup.
8. Diphtheria is frequently followed by nervous derangements; which do not occur after croup.
9. Changes occur in the spleen in diphtheria; which are not found in croup.
10. Blood changes occur in diphtheria; which are not observed in croup.

In the treatment of croup, local bleeding, antimony in emetic doses, a belt of flannel covered with mercurial ointment, and a warm moist atmosphere in the first stage; stimulant emetics with sugar and ammonia in the second stage; and if respiration becomes very difficult, tracheotomy. In diphtheria, on the contrary, all antiphlogistic measures must be carefully avoided. There is, however, no specific for the disease, nor does any remedy appear to have any special effect. Tonics and stimulants are to be given from the first, and if necessary tracheotomy should be performed early in the disease, before severe exhaustion has come on. The author

corroborates Tronseau's advice that the operation should be performed very slowly, and refers to Pancoast's operations of cutting out a piece of the trachea, and not using a canula; and he concludes with some judicious remarks on the after-treatment, which, however, present no new feature.

Art. XIII. *On the Significance of Skin Affections in the Classification of Disease.* By T. CLIFFORD ALLBUTT, M. D.—As this gentleman intends to bring his views on the classification of disease to the notice of the profession in a more extended form, for which he has been collecting materials for several years, and as the subject matter of this article is contained in the work of M. Bazin on *Scrofula*, with which probably a very large number of our readers are familiar, a short notice of this article will suffice at present; although from the importance of the ideas presented, and from the work of M. Bazin not having been translated, it might deserve a more extended consideration.

The following extracts may show the author's meaning: in proposition second he says:—

"That life as it falls under the eye of the physician consists in a series of processes, which together constitute modes of growth; and that these modes are many, *e. g.*, scrofula, rheumatism, health, syphilis, tuberculosis, rickets, and so on." In proposition third: "That morbid states taken severally, such as bronchitis, meningitis, lichen, eczema, heart diseases, kidney diseases, &c. &c., are most frequently terms or members of such series; their serial connection being, however, often overlooked, and they themselves regarded as self-consistent disorders." In proposition fourth: "That these series are themselves again capable of comparison, and as in the case of scrofula and rheumatism, for instance, are often curiously related." And again: "It is steadily forgotten that health is a diathesis as much as is scrofula or syphilis, and that each of these is a mode of growth; some of these modes are more useful, others are less useful; but all tend, if unchecked, to pass through certain calculable cycles." Scrofula and syphilis "differ from health not by any superaddition of 'morbid principles,' but either (as in most cases) by the primary intention of the germ, or (as sometimes) by a deflection of growth at a subsequent stage."

As this is a subject which will require a very great amount of observation, we hope the author will not long delay his promised work, with the expectation that he will be able to present an exhaustive treatise on the subject. Although itself incomplete when published, it may be the means of attracting the attention of observers to the matter, and thereby expediting its development.

Art. XIV. *Cases of Fever, with Remarks on their Origin.* By W. E. C. NOURSE.—Twenty severe cases of fever are very briefly noticed with reference mainly to their origin, and from them the author makes the following deductions: First. "That it is malarious blood-poisoning coincident with depression, and faulty elimination, that originates fevers of the typhus group." Second. That "typhoid fevers originate in, first, some personal debility, but not that of starvation; secondly, blood-poisoning by malaria; and thirdly, something injurious conveyed (often in the water) into the intestinal mucous tract."

Art. XV. *The Forms of Pneumonia.* By OCTAVIUS STURGES, M. D.—In this article all the cases described as pneumonia in the *Records of St. George's Hospital*, are tabulated in six classes. The first class, Table of Cases of Hepatization occurring in the course of lingering diseases and ascribed to low or latent pneumonia. The second class, Table of Cases of Hepatization the result of blood-poisoning. The third class, Table of Cases of Hepatization from obstruction. The fourth class, Table of

Cases of Simple Pneumonia. The fifth class, Table of Cases of Hepatization where death was ascribed wholly or mainly to low or latent pneumonia. The sixth class, Some exceptionable cases, mostly resembling class four.

The definitions and descriptions of pneumonia by various authors are reviewed, showing the contradictory statements made, as the different forms of pneumonia are considered, and how the generic description of pneumonia applies only to the least common form of the disease. The results of mere passive congestion are declared to be incapable of being distinguished from the hyperæmia of commencing inflammation. The experiments of Dr. Robinson are brought forward to prove how by obstruction to the flow of blood in the veins, not only liquid albumen and blood, but also fibrin may be effused. To the remark that inflammatory effusion teems with organic life, it is replied, that in both the blastema develops organic forms, only more in the one than in the other. This reasoning is applied to the condition of the lungs, and the circulation through them; and it is inferred that in obstruction to this circulation by disease of the heart, all the appearances of inflammation may be accounted for on physical grounds alone. The same reasoning is applied to hepatization as to hyperæmia, and it is declared to be needless to inquire what light microscopical examination would throw on the matter, because no such information is to be found in the recorded cases, and the axiom is quoted, that, "pathological appearances must be interpreted by the light of clinical knowledge."

The cases in each of the tables are commented on and allusion is made to the choice of pneumonia by Dr. Hughes Bennett for the elucidation of the statistical method of comparing treatment. "Simple pneumonia is rarely a fatal disease under any mode of treatment; as a secondary disease its associations are so many and various, that it seems almost hopeless to attempt classification sufficiently precise to bring cases into fair comparison."

The cases of the first class, forty-six in number, are omitted for want of space.

Art. XVI. *On a Case of Death from Hemorrhage into the Pericardium, as a result of Rupture of One of three true and Circumscribed Aneurisms of the Coronary Artery of the Heart; with Observations on Aneurisms or Aneurismal Dilatations as a result of Embolism or Thrombosis.* By JOHN W. OGLE, M. D., Physician to the Hospital, and Lecturer on Pathology.—A very interesting case of aneurism of the coronary artery, with an old aneurism of the right kidney, and aneurisms in two minute muscular branches of the brachial artery of the right arm in close relation with the median nerve, is related in this paper, illustrated by a wood cut of the heart.

Art. XVII. *Statistics of Strangulated Hernia. Some Facts in reference to Strangulated Hernia, founded on a Record of 200 Cases in the Book kept at St. George's Hospital.* By TIMOTHY HOLMES, Assistant Surgeon to the Hospital and Lecturer on Surgery.—Of these 200 cases 68 were inguinal, 6 umbilical, and 126 femoral. In the cases of inguinal hernia—as to sex, 4 only were females; as to age at the time of operation, 4 were under the age of 7 months, 2 over one year and under 15 years; from 15 to 20 years, 4 cases; from 20 to 30, 11 cases; from 30 to 40, 9 cases; from 40 to 50, 11 cases; from 50 to 60, 18 cases; from 60 to 70, 8 cases; above 70, 1 case. Result of the operation: Of the 68, 19 died. Causes of death: 5 died from causes unconnected with the operation; 8 from peritonitis; 3 from injury to the gut (1 perforated, 2 from violent taxis);

1 from pyæmia; 1 from diffuse cellular inflammation; 1 from collapse from wound of artery in operation (in the mesentery, in incising the stricture). Time of strangulation: 30 were operated on in 12 hours or less from its occurrence, of these 7 died (3 from injury in taxis, 1 from wound of artery as above, and 3 from peritonitis); from 12 to 24 hours after strangulation 13 operations, 4 deaths (1 from fatty heart, 1 from diffuse cellular inflammation of scrotum, 2 from peritonitis); in the 2d day, 9 operations; in the 3d, 6; in the 4th, 1; in the 5th, 1; and in the 6th day, 1; of these 25, 8 died, 2 being moribund when operated on. From this it appears, "that there is less risk in early operation, than in any less decisive measure, and that if cases of strangulated inguinal hernia were gently handled in the efforts at taxis, and operated on early when such gentle attempt had failed, few of them would die." Effect of age on results: of the 4 cases in infancy, 3 died; of the 2 in childhood, 1 died; from 15 to 30, no deaths; from 30 to 50, 4 died; of the 27 cases above 50, 11 died.

Of umbilical hernia there were 6 cases and 4 deaths. Five were females; the youngest case was 39 years of age; of the four deaths, 1 was moribund at time of operation, 1 died from low pneumonia, 2 of peritonitis.

Of femoral hernia there were 126 cases, females 107; males 19. Of these last 11 died; 3 from causes unconnected with the operation; 1 from cholera; 1 from strangulation of small intestine inside the peritoneal cavity, when convalescent from the operation; 1 mainly from bronchitis; in 3 the gut was ulcerated or gangrenous; in 2 peritonitis existed before the operation.

As to side, not noted in 2, 72 on the right, 52 on the left side. Age, 1 at 8 years, in a girl who recovered; from 20 to 30, 5 cases with 3 deaths (1 in a male æt. 29, admitted with acute peritonitis, who died a few hours after the operation); from 30 to 40, 18 cases, 5 deaths; from 40 to 50, 31 cases and 6 deaths; from 50 to 60, 36 cases, 16 deaths; from 60 to 70, 28 cases, 16 deaths; above 70, 7 cases, 1 death (in a woman æt. 76, in whom the gut was ulcerated in the line of stricture). The period of strangulation: below 24 hours, 15 cases, 1 death; below 2 days, 30 cases, 8 deaths; 2 days, 29 cases, 11 deaths; 3 days, 18 cases, 8 deaths; 4 days, 11 cases, 5 deaths; 5 days, 5 cases, 3 deaths; 6 days, 5 cases, 2 deaths; 7 days, 3 cases, 2 deaths; 8 days, 4 cases, 3 deaths; 10 days, 2 cases, 2 deaths; uncertain, 4 cases, 2 deaths.

Contents of sac. In 3, sac not opened, 1 not noted, 2 empty; epiploceles 7 cases, 2 deaths; enteroceles, 70 cases, 23 deaths; entero-epiploceles, 43 cases 21 deaths. Causes of death: of the cases of femoral hernia 47 died; 9 from gangrene of intestine; 8 from ulceration of the gut and perforation in the line of stricture; 1 from inflammation of the gut, passing into gangrene; 4 from collapse, the patients being moribund at time of operation; 17 from peritonitis (in 6 existing before operation, in 1 caused by taxis); 1 from erysipelas; 1 from exhaustion; 6 from accidental causes.

In this variety of hernia a very short period of strangulation may suffice to produce gangrene of the gut; and the sharp edge of Gimbernat's ligament is the frequent cause of ulceration in the line of stricture. Deaths from this operation "are, in a great degree, preventable by the simple plan of operating at the earliest possible moment, before the intestine has sustained fatal injury. After the operation no purgatives are given, except on clear indications for their administration, whatever the duration of the constipation be."

In 8 cases the sac was not opened, 5 inguinal, 3 femoral, with 1 death,

from diffused inflammation. Since this date 6 others have been so operated on, 4 inguinal, 2 femoral, all of whom have recovered.

Art. XVIII. *Two Cases of Strangulated Inguinal Hernia, with Remarks.* By T. HOLMES.—These two cases are related to point out two opposite mistakes in practice:—

"In the first, the gut, which was irreducible, was injured by too protracted taxis; it gave way in the operation; the rent was sewn up, the bowel returned to the peritoneal cavity, and the patient recovered. In the second, the bowel, although perfectly reducible, was allowed to remain unreduced for three days, by some strange negligence of the medical attendant, who never applied the taxis at all. This set up peritonitis, which went on to a fatal issue, in spite of the prompt reduction of the hernia."

In commenting on the second case the author takes occasion to examine the views of Mr. Hutchinson:—

"1st. That peritonitis is very rare before the return of the gut, even though strangulation may have persisted for a long period. 2d. That, on the other hand, it sometimes occurs after the reduction of a herniated bowel by taxis, and often after its reduction by operation; and is a main cause of death after herniotomy. 3d. That, therefore, it is probable, if not proved that the cause of the peritonitis in such cases, is the reduction of inflamed bowel into the peritoneal cavity, from which, as from a centre, inflammation radiates over the general serous surface. Mr. Hutchinson, from these premises draws the conclusion that, in cases where the gut is much damaged, it is better to leave it in the sac after dividing the stricture."

Both agree in thinking that the stricture is the obstacle to the spread of inflammation from the gut in the sac, to the rest of the serous surface; only he regards it as an almost impassable barrier; while I believe that it is usually passed in the later stages of neglected strangulation, and he "altogether dissents from the conclusions of Mr. Hutchinson, and refers to the records quoted in the last paper, in which, in 17 cases of visible inflammation of the gut in femoral hernia the intestine was returned into the belly, and that only 5 of these cases proved fatal, in all of which the inflammation had gone on to gangrene," and he believes with Aston Key "that in all conditions of the gut, short of actual gangrene, it is better to reduce it into the belly."

Art. XIX. *A Case of Convulsions occurring after Delivery, with Remarks suggested thereby.* By A. D. MACKAY, M. B.—Mrs. D., æt. 28, was confined of her fourth child on April 27th, at 4 A. M.; at 10 A. M. she was seized with an epileptic convulsion; on the 28th, at 7 A. M., the fits had ceased; on 29th, 7 A. M., consciousness had returned; on 30th, 7 A. M., was incoherent in talking, at 8 A. M. was in a state of acute mania, and tried to jump out of the window; May 3d, 12 P. M., she was apparently quite herself. Treatment, at first, blister to nape of neck, spirit lotion to shaven scalp, and $\frac{1}{2}$ gr. ant. tart., $\mathfrak{m}$ x liq. opii sed. (Battley's) in liq. ammon. acct. every four hours; in the evening a blister to the scalp, and a turpentine enema; April 30th, $\mathfrak{m}$ xxx liq. morph. acct. at night; May 1st, repeat the morphia; 2d, ol. ricini; 3d and 4th, repeat morphia; 7th, convalescent. At first the urine was loaded with albumen, but it gradually disappeared.

The routine practice of bleeding in such cases is highly reprobated. If the albuminuria is recent, in the absence of convulsion, cupping on the loins, followed by warm epithems, would be indicated, and probably relieve; purgatives, purgative and stimulant enemata, the inhalation of chloroform,

the exhibition of morphia, with perfect quietude, and the regular and proper administration of suitable nourishment are the means to be adopted.

Art. XX. *Instances of some of the rarer Varieties of Morbid Growths, Swellings, &c., connected with the Organs contained within the Abdominal Cavity.* By JOHN W. OGLE, M. D.—The case of a lady is related with a swelling on the right side of the abdomen, five inches to the right of the umbilicus, somewhat oblong in shape, rather firm and consistent in character, which proved obstinate against all the remedies used, and finally disappeared under the persistent use of Brandish's solution of potash. After which forty cases of various abdominal tumours are related, with the post-mortem appearances in each.

Art. XXI. *Report of the Medical Cases admitted during the year 1866.* By R. E. THOMPSON, M. D., Medical Registrar.

Art. XXII. *Report of the Surgical Cases admitted during the year 1866.* By G. C. RING, Surgical Registrar.

These two articles show that 1685 medical cases were admitted, with 195 deaths, and 2153 surgical cases admitted, 49 of which were transferred from the medical wards, and 31 cases were transferred to those wards, with 168 deaths, 22 of which were from pyæmia, and 7 from phagedæna. 253 operations were performed, with 26 deaths. These reports are highly creditable to the hospital, and also to the officers compiling them.

J. L. T.

ART. XXIII.—*On the Formation of so-called Cells in Animal Bodies.* By EDMUND MONTGOMERY, M. D., late Demonstrator of Morbid Anatomy at St. Thomas's Hospital. 8vo. pp. 56. London: John Churchill & Sons, 1867.

THIS essay, a "personal attempt of saving from oblivion a labour upon which has been bestowed much time and attention," was read before the Royal Society in December, 1866, in the proceedings of which a very brief abstract was published. Its object is to prove that many, if not all the varying forms of cells which go to make up the physiological and pathological tissues of the economy, may be artificially produced; that in such artificial production certain stages are passed through which are analogous to transitional forms which the author has observed in the microscopic study of human tissues; and from all this to conclude "that the so-called cells are but modified crystals"—though "modified in such a way as to possess the essential characters of the substances which Prof. Graham, in his most significant classification, has ranged under the head of colloids. They are, from a formative point of view, crystalloid beings; but functionally, they partake altogether of a colloid nature."

These are startling statements, and should, at least, be carefully verified before they are accepted; yet the writer states that they are based upon "many thousand observations."

An idea of these observations may be best obtained by briefly transcribing several of them:—

"Nuclei in growing tissues, when isolated from the mother-texture, are often surrounded by an irregular, shred-like, granular mass. Out of this would bulge, on the addition of water, a clear bright segment of a globule, increasing more

or less rapidly until it became full-orbed, when it would detach itself and float away an independent body. In this occurrence, which I have very frequently observed, it would seem that some imbibing viscid material was mixed up with another cohesive substance incapable of imbibition. On the addition of water, the former alone expands, being thus drawn out of its connection with the latter until it forms a separate body. Such bodies, as I take it, are not mere albuminous drops, but globules formed by the uniform expansion of a viscid imbibing material. The nucleus, with its shred-like inclosure, remains behind, apparently unaltered. But this is not what always happens under similar conditions. I have occasionally seen a much more interesting result; at times, namely, the clear imbibing material does not separate from the shreddy, granular substance. But the whole mass begins to swell out together, altering its irregular shape, till it has formed itself into a beautiful globule. Nothing could possibly surpass the perfect cell-appearance which is hereby produced. The nucleus, which was formerly the only regular shape amidst an unfashioned flake of granular stuff, becomes now, as by magic, surrounded by a splendid, clear-cut sphere, formed from that self-same amorphous matter, merely by the addition of water. Shapes are hereby produced differing nowise from fully formed cells in other parts of growth. In these cases the cohesiveness of the non-imbibing substance was probably not great enough to resist the expansion of the imbibing ingredient with which it was mixed up." (pp. 10, 11.)

Without pretending to deny these statements, or to say that they are identical with what we have seen, we can only compare the appearances described to the liberation of air-bubbles or oil-globules which have been entangled in tissues, or to the liberation of globules of gas when acetic acid has been added, under the microscope, to tissues containing carbonates. But Dr. Montgomery is too experienced an observer to have committed an error of this kind, and we can therefore only suppose the appearance to have been produced in some other way with which we are not familiar. The second of the phenomena described, which consists in a mere change of form, is nothing more than we may expect to take place as the result of imbibition, without calling to our aid the supposition that "the cohesiveness of the non-imbibing substance was probably not great enough to resist the expansion of the imbibing ingredient with which it was mixed up."

"These component parts, imbibing and non-imbibing, which make up the mass that is soon to encompass the nuclei, though they become at times so widely differentiated as entirely to separate from each other on the addition of water, must, nevertheless, closely resemble one another as regards chemical nature. In some rare instances, namely, the granules of the shreddy mass were *completely* dissolved by the action of water. The resulting globules shone, at first, wholly pellucid. Soon, however, the granules began to re-form, showing molecular motion. Ultimately the entire mass of the globule seemed to undergo coagulation, making up a solidified sphere around the nucleus." (pp. 11, 12.)

These facts, as well as "other striking phenomena" described in the paper, he proposes to account for by an "unequal coagulation."

Having never witnessed, in a very large number of examinations, any phenomena at all analogous to the latter described, involving a solution and re-formation of so-called cell contents, we will not venture a better method of accounting for them, but believe that their infrequency, admitted by the writer himself, should preclude them from being considered representative types of cell formation. One other observation from this first part of the pamphlet:—

"Not only single nuclei, with their appendix of shapeless material, are seen floating about in the juice of cancer, for example, but also clusters of two, three, or more, each such imbedded in a proportionately large mass of granular mate-

rial. Now, it happens sometimes that on the addition of water, the whole non-nuclear mass of such a cluster swells out, blending into one huge sphere, which incloses two, four, or more nuclei, as the case may be."

"This appearance, so simply produced under one's very eyes, is at once recognized to be identical in shape with some of the mysterious beings which have become so celebrated under the name of mother-cells." (pp. 12, 13.)

Nor is this more than we should expect under the present very generally received notion of a *cell*—that it is a mass of *germinal matter* and *formed material* in a varying proportion, according to the supply of pabulum—that the situation of the germinal matter is central, while that of the formed matter is peripheral, and that a cell-wall, if present at all, is only hardened formed material. These varying shapes are no more than are described by Beale and others as of constant occurrence in the blood-corpuscles, mucons-corpuscles, and other cells. They may terminate in the spherical shape, as described by Dr. Montgomery, or they may go on to more irregular forms whence they started, and finally conclude in these; or sometimes even farther still, elongating at one or more points, until finally a portion separates, and becomes itself a living, growing cell, derived from the original cell. Yet we have the author writing:—

"It must be confessed, that at all these most distinct sights, a flood of doubt is felt to rush in, threatening to sweep away the fondly nurtured belief which is contained in that most pregnant formula, '*omnis cellula e cellula*.'"

So, also, he proposes to show that nuclei will be produced by chemical and physical processes, "and there will then remain nowhere within the 'cells' a specific resort for the so-called vital forces." Thus he says:—

"Nuclei in cancers form in chemically transformed fibrous tissue. For instance, in many cancerous growths, the most recently formed portion consists of fibres. If these be traced from the newly-developed surface to deeper, older layers, a stratum will often be reached where the fibres begin to be 'nucleated.' Within the fading fibres very elongated, narrow, oval bodies will be seen at regular intervals. In penetrating still deeper, where the mass gets more and more soft, the oval of the 'nuclei' grows broader and broader, till, in some cases, it becomes a full sphere."

"Evidently," he writes, "there is here a slow chemical process going on, which is by degrees transforming the fibrous substance into a viscid material. The consequence is, that globules strive to form as soon as this material begins to imbibe the surrounding juice. At first, these globules are much compressed by the lateral resistance due to the fibrous matter in which they are still inclosed. But in proportion as the latter softens, they go on expanding. Sometimes, however, they get fixed by coagulation in some stage or other of their oval existence. *Thus the nuclei are found, during chemical differentiation, from a primary imbibing portion of the transformed fibrous substance.* The remaining portion, the internuclear part, becomes, as we have already seen, also viscid in its turn, and ends by inclosing the pre-formed nucleus as a secondary globule, the whole forming together the complete typical 'cell.'" (p. 21.)

We believe the first error here lies in the idea expressed, that the deeper layers of cells are the older, and the more superficial fibres are the younger. We believe the reverse to be true, and the varying shapes are probably the result of the same causes, according to which the deeper and younger layers of epithelium are more or less spherical, and the superficial flat and scaly. And as to the rest, we reject it, because it is too unreasonable to be accepted without the most positive demonstration, and such demonstration is here wanting. To say, from the data given, that "*evidently* there is here a slow chemical process going on, which is by degrees transforming the fibrous substance into a viscid material," is

evidently, in our opinion, begging the question. It may be said, "Neither can the other theories of formation of tissues be demonstrated to be true." Without attempting to disprove this statement, we can say that few, at least, are as arbitrary as the one proposed by Dr. Montgomery.

The second part of the pamphlet is on the "artificial production of cell-shapes." The fact disclosed by the previous studies alluded to is stated to be this:—

"There exist plastic materials, viscid imbibing substances, which, by their physical properties, give rise to the formation of those shapes that have been called cells, and that are believed to be the bearers of those peculiar powers known under the name of vital." (p. 30.)

Believing this, the author sets about to find such a substance, and hit upon an *artificial myelin*, which he prepares thus:—

"About one ounce of concentrated alcohol is added to the yolk of a fresh egg, and well mixed with it. The whole is then heated until it begins to boil, when it is rapidly filtered through a cloth not too dense. The yellow fluid which filters through is left to cool and to evaporate; a sediment remains behind, which is the substance sought for." (p. 30.)

So curious have we been with regard to these facts, that we have had prepared, by a careful pharmacist, this substance, according to the formula of Dr. Montgomery, and have repeated his experiments with a view of verifying them, if possible. First we took, as recommended by the author, a small particle of this sediment, and, adding a drop of water, placed it under a quarter of an inch objective. There was at once displayed a most beautiful and interesting picture, to which the description given by Dr. Montgomery is, in the main, correctly applicable; as he states:—

"From all the free margins of the mass there shoot forth slender tubes, more like nerve tubes than anything else. These tubes grow longer and longer, maintaining their original diameter, till they sometimes stretch over the whole field of the microscope. They must be extremely pliable, for the free end wriggles about, serpent-like, till it generally doubles upon the body of the tube, coiling then around it many times." (p. 31.)

The only exception we can make to this description, and we believe it an unimportant one, is, that in our own examinations, the tubes did not always maintain their original diameter, but contracted and dilated as if to accommodate themselves to increased or diminished lateral pressure; as do red blood-corpuscles, to the movements of which they are also compared by the author. They seemed also, as he says, to possess a central and peripheral constituent, with distinct line of demarcation, never blending with each other, but remaining distinct, though often touching each other, their most marked characteristic being an "unequalled plasticity."

From the occurrence of these phenomena the author infers a *crystalline force*, which he says is counteracted by the admixture of white of egg, which caused the evolution of globules to take place instead of the tubes and shapes before described. This experiment was first slightly, though we believe not essentially, modified by ourselves. Instead of using albumen, we mixed the sediment intimately with glycerine of high specific gravity, when, on addition of water, instead of tubes, "segments of splendid clear cut globules began to form at the free margins." These did not, in our own experiment, replace entirely the formation of tubes, but accompanied it. These phenomena are compared by the author to similar phenomena exhibited by the crystalline lens of small fish on imbibition.

That these globules, however, in any way resemble cell forms, appears to us very far from correct. Any one who is at all familiar with the microscopic appearances of oil-globules of any kind, will recognize these appearances and decide in a moment against any resemblance to cell-forms. That these globules are not due to a "crystallizing tendency," we hope also to show shortly.

Proceeding with his subject, the writer states that "the clear globules produced in the manner above related, would have been more 'cell'-like if, instead of being hyaline, they had had a granular appearance." This he accomplishes by the addition of very dilute nitric acid which precipitated the albumen within the formed globule. This we also repeated, and there seemed to result in many of the globules a granular deposit, though many remained unaltered. Yet even when they were present, their appearance was far from that of the granules of the cell. A more or less closely "packed" appearance may be said to have been characteristic, and the granules themselves were much more highly refractive and transparent than albuminous granules of cells. Fearing lest the modification we made should have altered the conditions, we repeated the latter experiments, using albumen instead of glycerine, when the addition of dilute nitric acid was again attended by the appearance of the granules in some of the globules, though in no increased number, if in as many. There were, possibly, a greater number in which fewer granules were present, though these were very large instead of exceedingly small, as stated by the author. Now, had the slightest imbibition of albumen taken place, a supposition which is at the outset unlikely, from the non-osmotic properties of albumen, there should have been an increased precipitation on the addition of nitric acid, which was very far from being the case.

Even more perfect cell-forms are stated to have been produced by the addition of blood-serum to the prepared myelin. This we also repeated, though without producing the perfect cell-forms containing nuclei and even nucleoli. These latter were obtained, as we interpret the writer (the arrangement of paragraphs involves some uncertainty), by the addition of water to the myelin with which the blood-serum had been intimately incorporated. "On the addition of water, one, or a few small globules would first start into existence. These were at the time imbedded in a film of granular material. By degrees this, together with the globules, would get loosened from the glass slide and float about, the whole resembling exactly those nuclei inclosed in granular flakes which have been described in the first section of this paper" (quoted above).

"Like these, they would sometimes subsequently assume the globular shape, forming thus the most perfectly 'nucleated cells' that can be imagined. To prevent the likeness from being deficient in the slightest detail, some of the inner globules had formed round a single granule, which then represented the 'nucleolus.'" (p. 36.)

Our own experiments did not exhibit these highly beautiful results. We obtained without difficulty the granular flakes, and occasionally a flake would be seen in which with difficulty could be discerned an internal portion not unlike the remains of a nucleus in a fattily degenerated cell; but by no means distinctive enough to be admitted as evidence in such a case as this. The effect of the intimate admixture of the serum and subsequent addition of water seemed to be the production of a very minute state of division of the oily matter, so that the large drops were reduced to minute drops and granules.

As the result of prolonged action of water upon myelin, bird's-nests-cells are also said to be produced, and we are certain we have seen, as the result of such prolonged action of water, the appearances thus compared. So, also, the writer says, "pus cell-like bodies are formed by allowing the myelin to dry upon a slide, and adding water a second time. The appearances indicated by this description we believe we have also seen, though the resemblance was not so close as Dr. Montgomery's diagram would show.

A very proper question now arises: Can these forms be accounted for upon any other supposition than that of crystallization? We believe they can—that a very simple physical relation between the substance called myelin and the reagents added to it, is entirely adequate to explain all the phenomena. Such relation we believe to be that of *non-miscibility*, accompanied by a *marked difference* in the *refracting power of the two substances*. Thus, when water is added to the myelin, and the shooting out of the tubes takes place, is not the process more or less analogous to the peculiar and varied movements observed when oily substances are poured upon the surface of water? We have here the most rapid movement and the production of the most fantastic forms. And this, admittedly, not by any crystallizing process, but in consequence of the physical relation, the non-miscibility of the water and oil. This occurs when other substances are thrown together which do not mingle immediately, but which subsequently unite; thus, alcohol and water, glycerine and water respond more or less similarly, though of course temporarily, as they are entirely miscible.

Again, the globular forms resulting on the additions of concentrated glycerine or albumen of egg are such because of the greater density of these latter substances, whereby as free a movement of the myelin is not permitted to take place—the resistance to movement is greater, hence globular forms result.

And that the myelin, as prepared by Dr. Montgomery, is not only like oil in microscopical characters as described, but also in its chemical properties, we think, can be shown. Thus, when the myelin tubes had been produced under the microscope, the addition of ether caused their immediate disappearance, showing a great solubility in this fluid. Again, we added some of the myelin, as prepared for us, to ether in a test-tube—an apparent solution resulted immediately, and on filtration the clear golden liquid passed to the other side leaving upon the filter a scarcely perceptible residue of matter deposited from the atmosphere. But to guard against error, we scraped the dust-like matter from the filter, placed it under the microscope, added a drop of water, but no myelin tubes appeared. Hence the substance producing these forms must have passed over in the ethereal solution. Not only this, but we evaporated the ethereal solution to dryness and took a small portion of the residue, placed it upon a glass slide, added a drop of water, and put it under the glass. At first, but a mass of globules appeared, but in a few seconds the so-called *myelin tubes again shot forth*, showing a complete solubility in ether.

The mode of preparation of this substance by Dr. Montgomery would also go to show the same chemical characters. First, concentrated alcohol is added to the yolk of an egg and well mixed, then it is heated to boiling. These processes must remove all of the albumen leaving the *oil* in the yellow fluid obtained by filtration, which is left to cool, evaporate, and produce the "myelin."

We do not think that the author intends by his "myelin," the *protagon* of Hoppe-Seyler and others, which in one of its impure states, was known as *myelin*. The process of preparation and properties are so different that it would seem impossible to mistake them. Thus, according to Hoppe-Seyler (*Handbuch der physiologisch- und pathologisch-chemischen Analyse*) protagon crystallizes in tufts of needle-shaped crystals, and is colourless, odourless, and *insoluble* in *pure ether*, though soluble in ethereal oils, and ethereal solutions of fat by the aid of heat. Its preparation is also by a much more complicated process. Dr. Montgomery states, however, that the discovery of the substance named protagon promises to throw much additional light on the subject. And in naming the situations in which the plastic substance which he calls myelin is found, he says: "Even the brain consists to a great extent of it. The contents of the nerve-tubes are mostly myelin. It enters largely into the composition of the spermatozoa. The crystalline lens contains it in profusion. And it is not unlikely that the blood-corpuscles, all so-called cells, and perhaps also the muscles, owe their configuration and many of their properties to it." These are the situations named by Hoppe-Seyler as those in which the protagon occurs, except the crystalline lens, the cells, and muscles. Protagon is also found, according to the latter writer, in pus-corpuscles and the oil of eggs.

We have thus reviewed these points at some length, because we have been anxious to show, if possible, that not only are these formations, artificially produced by Dr. Montgomery, wanting in analogy to natural vital processes, but also that they are not even due to a chemical process of crystallization. The only point in which an actual resemblance may be said to have existed was in the myelin tubes formed on the addition of water to the myelin, which resembles, more or less, actual nerve matter. And in true nerve matter there is, undoubtedly, a natural myelin more or less similar to the prepared. But even here, a practised eye would very quickly recognize a difference, though we might not by description be able to indicate it, while the physical properties of the substance, as shown by its chemical composition, might account for them. Beyond this, however, we can sincerely state that not a single form could be mistaken for any cell-form which had recently been under the control of vital influences. Bodies possessing all the microscopic characters, and shown to have the chemical characters of oil drops, were alone seen. These in modified forms as the result of emulsification through albumen, either of eggs, or as contained in the serum of the blood, were also present, but bodies which could be taken for living cells, none.

It is a fact, that many more substances, identical with those entering into the tissues of the body, are to-day formed in the laboratory than could be prepared even a few years ago, and we believe that many more will also be prepared, but that living ultimate anatomical elements, call them cells or "organic units," are ever formed like the units of *inorganic* bodies "by dint of similar inherent qualities, formed, in fact possessed of all their properties, as necessary modes of appearance, as soon as certain chemical compounds are placed under certain physical conditions," we believe cannot be demonstrated. Some presiding principle, call it organic force, vital force, or natural force, or nature, must be present, controlling or modifying the individual method, but insisting upon the general applicability of that truly pregnant formula—

Omnis cellula e cellulâ.

J. T.

BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*The Transactions of the American Medical Association.*
Instituted 1847. Vol. XVIII. 8vo. pp. 552. Philadelphia, 1867.

THE Eighteenth Annual Session of the American Medical Association, the *Transactions* of which are before us, was held at Cincinnati, Ohio, in May 1867. The session was formally opened by an address from the President, Dr. Henry F. Askew, of Delaware, which is marked by sound practical sense.

From the Section on the Practice of Medicine and Obstetrics, two papers are reported. The first is by Dr. Stephen Rogers, of New York, on Extra Uterine Pœtation and Gestation, and the early signs which characterize the symptoms of the fatal hemorrhage into the peritoneal cavity; suggestions for the positive diagnosis of this fatal condition, and a plea for the treatment indicated in it, with the view of saving the life of the woman.

This paper presents one of the fullest expositions with which we are acquainted of the several important questions connected with the diagnosis, prognosis, and treatment of extra-uterine pregnancy, based upon a careful examination of the cases upon record, and personal observations.

The signs of extra-uterine pregnancy are, according to Dr. Rogers—"First, those of regular pregnancy, until generally the fourth or sixth week, when, if it be of the tubal variety, there appears, *second*, paroxysms of hypogastric, colicky pains, usually referred to the right or left iliac region, recurring at varying intervals, usually attended by nausea, a feeling of debility, torpidity of the bowels, and occasionally, vesical and rectal tenesmus. In a great percentage of the cases this pain is followed or accompanied by, *third*, a sanguinolent, clotty, and shreddy discharge from the uterus, which, when present, is a sign of great significance. It is usually regarded as a reappearance of the menses, or an approaching miscarriage. *Fourth*, the uterus is early appreciably enlarged, and there is a marked tenderness over the iliac region corresponding to the pain. If the foetal cyst be ovarian or tubo-ovarian, the colic pains are less certain to be present, but the remaining signs will be the same. While I recognize the great value of this symptom of colic, when taken in conjunction with the other signs here enumerated, it may be dangerous to rely upon it too implicitly." If, however, there should remain any doubt as to the occurrence of hemorrhage into the peritoneal cavity, Dr. R. advises that the doubt be cleared up by the insertion of a trocar, which he believed to be "a perfectly innocent measure by which the presence of blood in the peritoneal cavity can be demonstrated, or its absence proved." If, says Dr. R., blood be found in a case which possesses such a history as I have described, there is hardly a chance that it proceeds from any other than an extra-uterine foetal cyst." In respect to the management of cases of well diagnosed extra-uterine pregnancy, Dr. R. recommends an early resort to gastrotomy and the ligation of the vessels from which the hemorrhage into the peritoneal sac proceeds. Dr. R. defends this operation as comparatively easy of performance, and the only one capable of affording a fair chance for the preservation of the life of the mother, in cases, the termination of which, when left alone, is almost invariably in her death. We recommend to every obstetrical practitioner a careful perusal of this interesting paper.

Following this are remarks by M. K. Taylor, M. D., late Surgeon, U. S. V., on "Heart Diseases as observed in the Military Service from 1861 to 1865 inclusive."

There was noticed among the troops during the late war, by the army surgeons, a large number of cases of disease of the heart, the exact nature and causes of which gave rise to much diversity of opinion. In investigating the cases which occurred among the men admitted into the General Hospitals at

Keokuk, Iowa. Dr. T. detected some peculiarities, both in the symptoms, and the relative frequency with which the ventricles were involved, which differed in some respects from those described in the standard works on cardiac diseases. The more important one being the structural changes in the right ventricle from dilatation of its walls, conditions denied by many of the Surgical Staff, and by others scarcely recognized. Among 1722 cases of a purely medical character which fell under the care of Dr. Taylor, 213 were of diseases of the heart—namely: simple dilatation of right ventricle, 16; simple hypertrophy of right ventricle, 26; dilatation of right ventricle with valvular disease, 36; simple disease of tricuspid valves, 38; simple disease of mitral valves, 16; diseased semilunar valves of aorta, 7; dilatation of left ventricle with valvular disease, 21; simple hypertrophy of left ventricle, 34; pericarditis, 5; functional disorders, 33; cases supposed to be dependent on muscular debility and anæmia, 5; rheumatic cardialgia, 1.

In addition to the above cases of cardiac disease, 50 others occurred in persons mustered out of service by reason of the expiration of their terms of enlistment. Of these no particular notes were kept by Dr. T. Three-fourths of them, or thereabouts, were, it was evident, diseases of the right side of the heart, judging from the histories kept by a colleague of Dr. T.'s.

Nine-tenths of the cases observed by Dr. T. were preceded by disease of the respiratory apparatus, as bronchitis following measles, pneumonia or pleurisy; but bronchitis following measles took precedence over the other diseases by nearly double their joint number. All the patients had been exposed to the severe fatigue and hardships of the Mississippi Valley campaigns during the years 1862, '63, and '64, and had suffered more or less from scorbutic poisoning.

The following are the conclusions at which Dr. T. has arrived in respect to the cardiac affections of which he treats:—

“1st. There had been some impediment to the free circulation of the blood through the lungs at no very remote period.

“2d. This impediment arose from very different conditions—one being, mechanical obstructions dependent on consolidations of the lung substance, as in pneumonia, or by compression, as in pleuritic effusions; and the other dependent on functional derangements of the respiratory action, as in bronchitis, where the introduction of air is more or less interfered with by thickening of the bronchial membranes, or the presence of tenacious mucus; or, on the other hand, from external compression of the thoracic walls by the belts, uniform, and weights borne upon the back and shoulders, thereby preventing the proper aëration of the blood, and with that an arrest of its capillary circulation.

“3d. The depressed condition of the muscular structure of the heart, as shown by its feeble action, but further corroborated by the loss of muscular tone throughout the entire system, and which we always find in scorbutic and chronic malarial conditions.

“4th. In morbid states of the circulating fluid.

“5th. In sudden and undue burdens imposed on the heart during rapid marches, or the overwhelming fatigues and excitements of the battle.”

This paper is well worthy of an attentive study; practical deductions may be gathered from it that will prove equally important in civil as in military practice.

From the Section on Meteorology, Medical Topography, and Epidemic Disease, we have but a single report, namely: On the Meteorology, Medical Topography, and Epidemic Diseases of Illinois, by Dr. R. C. Hamill, of Chicago. The report presents a concise sketch of the several leading points connected with the topography, meteorology, habits, dwellings, diet, and general habits of the people, with a brief sketch of the more prevalent diseases.

The report from the Section on Surgery comprises six articles. The first is on the Action of Belladonna in Diseases of the Cornea, by Dr. J. S. HILDRETH, of Chicago, Ill. According to Dr. H., in affections of the cornea, occurring, *a.* With anæsthesia and diminished dilatibility of the pupil, the application of belladonna to the eye is indicated. *b.* With normal dilatibility of the pupil, and absence of corneal anæsthesia, belladonna is not required.

In the second surgical paper, Dr. JAMES L. LITTLE, of the city of New York, describes the application of plaster of Paris as a substitute for the ordinary

splints in the treatment of all the various forms of fracture; of diseases of the joints, where it is necessary to keep the parts at rest; and also in the management of club-foot, and other deformities of the limbs. After excision of bone, it is said that there is no form of dressing which is so applicable. Dr. L. describes the mode of application of the plaster splints in the treatment of special fractures.

The third surgical paper is on the Ligation, with Depletion, of Varicose Veins of the Leg, with a case of Radical Cure, by Dr. B. HOWARD, of New York. Dr. H.'s plan of operating is to ligate the enlarged vein at a number of points along its course by passing, while the patient is standing, a silver wire beneath the vein, at each point, by means of an aneurism needle; the ligatures being fastened in the manner described by Dr. Bozeman, of New York. Previously to fastening any but the upper and lower ligatures, Dr. H. punctures the swollen vein in three or four places along its course, and by gentle manipulation empties the vessel of its blood. The remaining ligatures being fastened, the leg is to be then placed in an elevated position, and kept constantly covered with a cloth wet with a lead and opium wash.

The fourth surgical paper is a report from the Committee on Ligation of the Subclavian Artery, by WM. PARKER, of New York. This report contains, in tabular form, the leading particulars and the results of nearly all the cases in which the operation has been performed. Many cases are omitted from the table because they were recorded with too little detail. Among these are included thirty-five which occurred in our army during the late war, and nine related by Pirogoff in his *Outlines of Military Surgery*. The results of these cases are, however, included in the final analysis. Some nine or ten cases, casually alluded to in various treatises on the subject, or in medical journals, have also been omitted, or which are unaccompanied with references, or were contained in volumes inaccessible to the committee.

Upon a revision of the cases embraced in the statistical table given by the committee, the army cases, and those of Pirogoff, it appears that the subclavian artery has been tied in 196 instances. The operation has been followed by death in 107, and by success in 88, being a mortality of 54.5 per cent. The result of one case is not given.

The operation has been performed on 138 males, and 14 females, being a ratio of nine males and a fraction to one female. In 129 cases, in which the age of the patient is noted, the youngest was 18, the oldest 73 years; the mean being 38 years and about 2 months. In 134 cases, it is stated that the operation was performed on the right subclavian in 82; on the left in 52.

The earliest period of the separation of the ligature recorded is the 8th day; the latest the 113th day; the mean the 21st day. In aneurisms, the proximal ligature has been applied in 110 cases, with 48 deaths; a mortality of 43.6 per cent. The distal ligature in 10 cases, with 8 deaths; a mortality of 80 per cent. The number of deaths following the proximal ligature for idiopathic axillary aneurism was 22 out of 80 cases—a mortality of 27.5 per cent. The mortality in cases of proximal ligature for traumatic axillary aneurism was 8 out of 24 cases, or 33.3 per cent. The subclavian has been tied in 29 instances for subclavian aneurism; 24 were idiopathic, and 25 traumatic cases. Of the former the proximal ligature was applied in 22 cases, with 13 deaths; and the distal in 2 cases, with 2 deaths. The 5 traumatic cases were treated with the proximal ligature, with 3 deaths.

Of aneurism of the innominate, 8 cases are reported in which the distal ligature was applied to the subclavian; of these, 6 were fatal.

The subclavian has been tied for other causes than aneurism in 70 instances; of these, 48 were fatal—a mortality of 68.5 per cent.

In its first division the subclavian has been tied in 13 cases, all of which were fatal. In its second division it has been tied 9 times, with 4 deaths; and in its third division 174 times, with 89 deaths.

Hemorrhage occurred as a cause of death in 29 cases out of 67. The next cause is exhaustion, 11 cases; and gangrene 8. Pyæmia, pleurisy, rupture of sac, &c., complete the list.

The fifth of the surgical papers is a contribution to the history of the Hip-

joint Operations performed during the late civil war; being the statistics of 20 cases of amputations, and 13 of resections at this articulation in the Southern service, by Dr. PAUL F. EVE, Professor of Surgery in the University of Nashville, Tenn. The success in the 20 cases of amputations was 4; or 1 in 5. Three of the recoveries were after primary, and one after secondary amputation. Of the 13 cases of resections, 5 may be considered successful; or 1 in 25. Two after primary, two after secondary, and one intermediate (six hours) recovered. A comparison, then, of the two operations at the hip-joint shows resection to be doubly as favourable as amputation.

The sixth surgical paper consists of a Statistical Table on Lumbar Colotomy, or Amussat's operation for the relief of Non-congenital Intestinal Obstruction, and of Vesico-Intestinal Fistula, by Dr. GEORGE C. BLACKMAN, Professor of Surgery in the Medical College of Ohio. Forty-five cases of the operation are collected and arranged in tabular form, showing, in different columns, date of case, sex and age of patient, name of operator, disease for the relief of which the operation was undertaken, situation of artificial anus, and result in each case. The result of the operation, as shown by these cases, points it out strongly as a means of relieving suffering, and of affording, when promptly practised, a fair chance of prolonging life for often a considerable length of time, and in a condition of ease and comparative comfort.

The next paper is a concise Report of the Delegate to the British Medical Association, by Dr. C. C. COX, of Maryland.

The paper which follows is a very able report by Dr. W. M. WOOD, upon the Rank of the Naval Medical Staff. The importance of raising the position of the medical staff of the navy to one higher, more independent, and more comfortable than it now enjoys, is shown in temperate but forcible language. This is due to the medical gentlemen of the navy, from the important duties intrusted to them, and to their rank as educated and scientific gentlemen; while it is adapted, at the same time, to promote their professional efficiency by securing the respect and obedience of the men, and in this manner to further the best interests of the service.

We have next a report on "American Medical Necrology," which presents concise but highly interesting sketches of a number of the physicians of the United States, recently deceased.

The next two reports relate pretty much to the same subject—The first is the Report of the Committee on Medical Education, and the second a Report of the Proceedings of a Convention of Delegates, from the several Medical Colleges in the United States, to thoroughly revise the present system of medical college instruction. The result of the deliberation of the convention, and the conclusions of the Committee on Medical Education differ in no essential particular. Either of the plans proposed in these reports, as the basis of a system of medical education, if carried out fully, would be a decided improvement upon the system of education pursued in even the best of our medical schools.

Next in order is the Report of the Committee on Medical Literature. By Dr. ALFRED C. POST, of New York. The report is made up chiefly of a mere list of the several medical works published in the United States during the twelve months immediately preceding the date of the report; whether original contributions, or new editions of previous contributions, or reprints of foreign works, with or without notes by American editors. A bare catalogue of titles is given, without a word of comment, if we except what is contained in the few paragraphs with which the list of books is prefaced.

The next report is on Insanity, by Dr. ISAAC RAY, late of Providence, R. I. This ably written report presents a series of well reasoned general considerations in reference to the nature, seat, and causation of insanity and its proper treatment. The entire report is replete with interest, while the views thrown out by the author have an important practical bearing. To appreciate the full value of the positions set forth in it, the report must be read as a whole; it would not be an easy task to present a proper analysis of it.

Passing by the Report of the Special Committee, to which was referred several reports and papers, presented to the Association during its session of 1867, but not acted upon by the appropriate Sections, as one devoid of general interest,

we come to the Report of the Committee on Local Anæsthesia, by ERNEST KRACKOWIZER. The following extract from the latter report will present the general conclusions at which the committee have arrived:—

"From our experience, we should say, that producing local insensibility by freezing ought to be restricted to operations that do not require the knife to be passed much below the surface, or which demand no particular skill, or in which the anatomical relation of the parts is of little importance.

"Between the two agents with which we are acquainted, rhigolene, by its more powerful effect, is preferable where a single incision, or even several such in the same track through thicker strata are required. In operations in which dissection is indispensable, *ether* should be selected, because it leaves the parts more supple, and more in their natural condition. The first would be our choice in incisions for phlegmons, opening abscesses, splitting of furuncles or carbuncles, in operations for inverted nail, or circumcision, application of caustics, and similar cases. The second we would employ for the removal of superficial tumours, the application of sutures, and in operations for strangulated hernia.

"In operations in which one of the cavities of the body is to be opened, as in the Cæsarean section, oophorotomy, although we have no experience, we imagine that local anæsthesia by freezing might accomplish its purpose, inasmuch as after the division of the skin, and the panniculus adiposus, the track of the knife lies in the connective tissues between the muscles, which is provided with a sparse vascularity. If in oophorotomy strong adhesions in the depth of the abdominal cavity should be detected, there would always be time to abandon the local agent, and to administer general anæsthetics.

"In comparing the value of local anæsthesia by freezing with the value of general anæsthesia, we feel warranted in saying that the former, in the manner in which we understand now to make it tributary to surgical practice, will not supersede the latter. Safety, so far as danger to life comes in question, is all on the side of the local freezers. But certainty of insensibility is absolute on the side of the general anæsthetics, but only relative on the side of the local freezers." "By calculating calmly and justly loss and gain in the use of the two, and by finding the balance so overwhelming on the side of the application of the general anæsthetics, that the risk seems insignificant in comparison with the great boon obtained."

The paper next in order is one on "Epidemic Cholera: its Causes and the Means for its Prevention." By Dr. ELISHA HARRIS, of New York. Though we find nothing in this paper that can be said to be positively true, yet the general positions advanced by the author bear so much of the impress of truth that they cannot be too strongly urged upon the attention not merely of the medical profession, but of all our municipal authorities—of every individual, in fact.

Dr. Harris thinks that we are warranted in the conclusion that at least two factors or classes of causes are necessary to the production of an epidemic prevalence of cholera. That the positive and essential factor or cause has its origin in India, and which is continuously, in successive series of men that are subjects of the choleraic poison, conveyed from place to place, and from country to country. That this first and everywhere essential factor of epidemic cholera resides in the intestinal contents of the sick. But we have no evidence whatever that the excrementitious matters of cholera patients are capable of directly infecting any well person, but that such excrement has only a certain zymotic or infective quality, which will repropagate cholera poison only when aided by another factor that must be found in the earth, or the organic filth with which the excrement becomes mixed; the atmosphere becomes contaminated with the exhalations from such filth, or from other organic matter in a state of decay; and, rarely, with putrescent organic matters within the intestine after death. Those last-named sources of the epidemic infection have been, as Dr. R. remarks, recognized by physicians in all countries, and in every epidemic; they constitute, singly or together, the same constant factor, and though not always dependent upon putrefactive organic matters—when only a porous and humid soil is present—it is an appreciable class of agencies, as regards cholera propagation, constituting one factor. Popularly, this factor comprehends the so-called localizing causes of epidemic cholera.

In respect to preventive measures Dr. H. remarks, that desirable and useful as restrictions against the introduction of *first* cholera cases may be, and important as the measure may be in some maritime and river towns, we "are taught both by reason and experience that when cholera has reached a district or a country, it is vain to depend exclusively, or chiefly upon quarantines against its further diffusion. Then it is that general hygienic measures should be everywhere applied, and specific and exact methods of disinfection and cleansing enforced in every house, in every apartment, and in every place wherein the excrement of the sick may be found, and wherever the localizing causes—the local factor—of cholera may be present. Whatever hope there may or may not be in quarantines, the chief and only sure defence against cholera is to be found in general and specific works of hygiene within the places that are exposed to cholera."

The volume closes with the two prize essays. The first is on "The Cause of Intermittent and Remittent Fevers," by Dr. J. R. BLACK, of Ohio. Rejecting *in toto* the doctrine that ascribes the production of the periodical fevers to a miasm generated under particular telluric and atmospherical conditions, he ascribes these fevers to irregular or general fluctuations of temperature—especially the decided contrast between the temperature of the different seasons of the year, or the different periods of the day, and which are more marked in certain localities than in others, and in different years and climates.

"With a summer mean of 60° and upwards," Dr. B. lays it down as a general law, "that the greater the diurnal oscillations of temperature the greater, *ceteris paribus*, will be the prevalence of autumnal fevers, and with the increase of the mean is the increased susceptibility to fluctuations; the higher the mean the smaller, comparatively, the oscillation requisite to produce the morbid phenomena, and the more intense their character."

"In connection with this law, it is proper to remember that the untoward effects from depressions of temperature are greatly increased by a large amount of atmospheric moisture, so that, without some idea of the quantity of this element at a given place, an array of figures would convey a very erroneous impression. The only means to give this expression is in the monthly average of rains."

Admitting the truth of the several facts adduced by Dr. Black, in support of his hypothesis, we cannot admit that he has succeeded in establishing the truth of such explanation of the etiology of remittents and intermittents. It can still be viewed in no other light than that of a mere hypothesis, encompassed with equal difficulties as that which refers the production of these periodical affections to a malarious poison. We may remark that the same, or very nearly the same view, has been advanced by more than one preceding writer.

The second of the prize essays is one on the "Treatment of certain Uterine Abnormalities." By Dr. MONTROSE A. Pallen, of St. Louis, Mo. Setting out with these two general positions, namely: 1st. That menstruation irregular in its character is always coincident with uterine disease; and 2d. All uterine abnormalities tend to a deformity of the organ, either in its neck or body, or both. Dr. P. insists that unless these abnormal conditions be removed by appropriate surgical means the comfort of the patient must necessarily become impaired, to a greater or less extent, for life, if life be not endangered.

For an account of Dr. P.'s views in regard to the uterine abnormalities of which he treats, and the remedial measures he recommends for their abatement or removal, we must refer to the essay itself, as it does not admit of an analysis that would do justice to its author, or convey a just view to our readers of his pathological views or practical directions.

D. F. C.

ART. XXV.—*Military Surgery.*

1. *Circular No. 7, War Department, Surgeon General's Office, Washington, July 1, 1867. A Report on Amputations at the Hip-Joint in Military Surgery.* By G. A. OTIS, M. D., Assistant Surgeon and Brev. Lieut.-Col. U. S. Army. 4to. pp. 87.
2. *Catalogue of the U. S. Army Medical Museum.* Prepared under the direction of the Surgeon General U. S. Army. By Assistant Surgeons ALFRED A. WOODHALL, J. J. WOODWARD, and EDWARD CURTIS, U. S. Army. 4to. pp. 961. Washington: Government Printing Office, 1867.
3. *A Contribution to the History of Hip-Joint Operations Performed during the late Civil War. Being the Statistics of Twenty Cases of Amputations and Thirteen Resections at this Articulation in the Southern Service.* By PAUL F. EVE, M. D., Professor of Surgery in the University of Nashville. Pamphlet reprint. 8vo. pp. 17. Philadelphia: Collins, 1867.

1. In this monograph, by Dr. OTIS, which is distinguished for exhaustive, laborious, and careful research, the author has recorded not only the coxo-femoral disarticulations performed in both armies during our late war, but he has also added and tabulated all the authentic cases that have hitherto been published in the annals of army surgery, and referred to the great majority of all other operations for disease and injury. The report is divided into an historical summary, an account of individual cases, a citation of the matured opinions of several military surgeons, who had large experience of the graver gunshot injuries of the upper portion of the femur, managed either by amputation at the articulation, or by excision, or by attempts at conservation, and a discussion of results.

There occurred in the late American war fifty-three authenticated instances of amputation at the hip-joint, performed on account of injuries inflicted by weapons or of lesions consecutive thereto. Of these, thirty-four were practised in the armies of the United States, and nineteen in the Confederate armies. These operations are divided into four categories: primary, intermediate, and secondary amputations, and reamputations. In the class of primary amputations are placed those performed in the interval between the reception of the injury and the commencement of the inflammatory symptoms, the duration of this period rarely exceeding, in the opinion of Dr. Otis, twenty-four hours. Under the term intermediate, are included those disarticulations practised during the persistence of the inflammatory stage, a period which varies between the expiration of twenty-four hours and some time in the second or third month. The secondary operations comprise those performed when the inflammation has abated, and the lesion become chronic, excluding those cases in which amputation had been previously performed in the continuity, which are described in the category of reamputations. If not strictly correct, this classification has the merit, at least, of being easily comprehended; and, with this understanding, we pass on to an analysis of the four divisions of American operations.

Primary disarticulation was practised in nineteen instances, several of which were immediate in the strictest sense of that term. The average interval between the reception of the injury and the date of the operation was seven hours. Eleven cases were fatal from the direct shock of the procedure; three lingered for two days, and two for eight or ten days; one has survived for over four years, and is now in excellent health; and two so far recovered that they were known to be in good condition, one for two months and the other six months from the dates at which the operations were performed. Excluding these cases, the mortality of primary disarticulations was 94.73 per cent.; including them it is reduced to 84.21 per cent.

Intermediate amputation was performed eighteen times, all of which were fatal. The causes of death were in five shock, eight exhaustion, two rapidly spreading gangrene, two probably hemorrhage at the time of the operation, and one pyæmia. The average duration of life was fifty-two hours, the patient who survived longest living only eight days. The interval from the reception of the

njury to the date of the operation varied from one day to one month, the mean length being a little over ten days.

Secondary disarticulation was instituted in nine cases, two of which recovered and seven died, thus affording a mortality percentage of 77.78. Three patients died of shock, two of secondary hemorrhage, one of surgical fever and erysipelas, and one of phthisis. The shortest interval between the injury and the operation was forty-three days; the longest was nearly three years; and the average interval was four hundred and twenty-nine days.

Reamputations.—In this category are included seven cases, with three deaths, or the low mortality rate of 42.85. One succumbed from pyæmia, and two, worn out by long suffering, were unable to withstand the shock of the operation. In six of the patients the previous amputations were done at the lower third of the thigh for gunshot wounds of the knee-joint, in five, and bayonet thrust of the same articulation in one; and in one the disarticulation was practised subsequently to amputation at the upper third of the thigh for comminuted fracture. The shortest interval between the date of the injury and the operation was nine weeks, and the longest three years and seven months; the average being nineteen months. The operators were Buck, Hassenburg, Packard, Fautleroy, Morton, Whitcomb, and A. B. Mott. These cases, along with Guthrie's fatal Ciudad Rodrigo operation, are the only recorded instances of amputations at the hip succeeding previous amputations in the continuity of the thigh in army surgery; and they demonstrate that it may be done with comparative safety.

An inspection of the foregoing statements indicates that, during our late war, the hip was disarticulated fifty-three times. Of these seven recovered, forty-four died, and two cases are doubtful. Excluding the doubtful ones, there were fifty-one operations in which the results are known, forty-four of these proved fatal, thus affording a mortality percentage of 86.27. These results, it is scarcely necessary to add, are more favourable than those obtained in any previous campaign.

Dr. Otis has included in his report one hundred and sixty-one authenticated cases of hip-joint amputations in military practice. Of these one hundred and forty-two were fatal, sixteen recovered, and three are doubtful. Deducting the last, the mortality of the procedure may be placed at 89.87 per cent.

In concluding our notice of this very interesting and valuable contribution to military surgery, we must express our great gratification at the manner in which it has been gotten up. As a publication of the Government Printing Office, it reflects the utmost credit on all concerned in its production, and is in no way inferior to its predecessor, Circular No. 6. The type is large, clear, and distinct; and the illustrations, thirty-nine in number, of which thirty are engravings, four lithographs, and five chromo-lithographs, are executed in the highest style of the art.

2. The *Catalogue of the Army Medical Museum* forms a portly volume, which is divided into three sections, one pertaining to the surgical collection, one to the medical collection, and one to the microscopical collection. Some idea of the extent of the cabinet may be formed when we state that four thousand seven hundred and nineteen specimens are deposited in the surgical section, eight hundred and twenty-seven in the medical, and two thousand one hundred and twenty in the microscopical section. The volume is very handsomely gotten up, and is illustrated by one hundred and eighty-one beautiful engravings, and six lithographs, five of which are devoted to the elucidation of the intestinal lesions of camp fevers. The names of the compilers, who are known to be pains-taking and earnest workers, are a sufficient guarantee that they have ably accomplished the objects for which the catalogue is designed.

3. The *cases of amputation at the hip-joint*, collected by Professor EVE, are included in the report of Dr. Otis, so that no further notice need be taken of them at this time. Our object in referring to the paper is simply to give a statement of the results of excision of the hip-joint, as performed during the late war, to the statistics of which Dr. Eve has made an important addition.

It will be remembered that Assist. Surg. Otis has narrated in *Circular No. 6* the details of thirty-two excisions of the head of the femur, an analysis of which may be found in the October (1867) No. of this Journal. Two cases, being somewhat doubtful, were excluded, so that of thirty operations, twenty-seven, or ninety per cent., were fatal. Adding to these eleven of the cases, three of which were cures, reported by Professor Eve, two are omitted, since one is included in the tables of Dr. Otis, and in one the result is uncertain, we find that the head of the femur was excised during the late war forty-one times, of which six recovered and thirty-five died, thus affording a mortality of 85.36 per cent., or nearly one per cent. less than that of amputation at the joint. So far as can be ascertained, seven operations were primary, all of which were fatal, and twenty-eight secondary, of which six recovered.

S. W. G.

ART. XXVI.—*Report on Epidemic Cholera in the Army of the United States, during the year 1866.* By Brevet Lieut.-Col. J. J. WOODWARD, Assistant Surgeon, U. S. A. 4to. pp. 65. Washington, 1867.

This very interesting and carefully drawn up report constitutes Circular No. 5, issued from the War Department, Surgeon-General's Office, Washington, May 4, 1867. To this report are appended six statistical tables exhibiting the monthly number of cases of deaths from cholera, &c., and extracts from the official reports of the surgeons at the several posts where cholera prevailed.

The number of cases of cholera which occurred in the army during the last six months of 1866, the period embraced in this report, was not large, yet, as justly remarked by Dr. Woodward, they bear so large a proportion to the number of troops exposed to the disease, and the circumstances attending the transmission of the epidemic from post to post are, in most instances, so well known, and of such significance in connection with the question of quarantine, that the history furnished in this report appears well worthy of the attention of all interested in questions of hygiene.

Out of a total mean strength of 12,780 men there were 2708 cases of cholera reported, and 1207 deaths. Of these there were 1749 cases, and 706 deaths, out of a mean strength of 9083 white troops; and 959 cases, and 501 deaths, out of a mean strength of 3697 coloured troops. The ratio of sickness and mortality among the troops exposed to the epidemic was, per 1000 of mean strength, as follows:—

For cholera 403.7 deaths per 1000 cases, or one death to 2.5 cases among white troops; among coloured troops, 522.4 deaths per 1000 cases, or one death to 1.9 cases; so that somewhat less than half the white, and somewhat more than half the coloured soldiers, attacked with cholera, died. For diarrhoeal diseases the mortality was small, 10.1 deaths per 1000 cases for white, and 6.1 per 1000 for coloured troops. For all other diseases the mortality was 11.7 per 1000 cases for white; and 13.6 per 1000 for coloured troops.

The facts embraced in this report, as justly observed by Dr. W., possess a twofold significance; on the one side in connection with the question of quarantine, on the other, in connection with that of local hygiene and therapeutic agencies.

As to the question of quarantine the facts are not perhaps conclusive, yet they are too numerous, and too important to be overlooked, and although certain breaks in the chain of evidence exist, there can be no doubt as to the general facts of the case.

The epidemic appears from the record to have radiated distinctly from two chief centres. Originating in the overcrowded barracks of Governor's Island, New York harbor, in the immediate vicinity of an infected city, through which recruits passed with more or less delay before arrival, the infection spread by readily traceable steps to Hart's Island, and other posts in the harbor; to Tybee Island, Georgia; to Louisiana, by way of New Orleans; to Texas, by way of

Galveston; to Louisville, Kentucky; to Richmond, Virginia; and to La Virgin, Nicaragua Bay. From Richmond it was carried to Norfolk, Virginia; from Louisville to Bowling Green, Kentucky. The probabilities appear to be that the disease was carried from New Orleans up the Mississippi River to various points on that stream, and west of it, and though the whole chain of evidence is not complete, yet there are a sufficient number of known cases of the transfer of the epidemic from one post to another in this region, to put this view of the whole movement beyond reasonable doubt. The other principal centre appears to have been Newport barracks, Kentucky, where the disease was plainly introduced from the infected city of Cincinnati, on the opposite side of the Ohio River. Although it did not prevail to any great extent at this post, yet it is in evidence that it was carried thence to Augusta and Atlanta, Georgia; to Nashville and Memphis, Tennessee.

At several points, as, for example, at Augusta and Atlanta, Georgia, the epidemic did not extend beyond the infected recruits, by whom it was imported. In many cases, however, it involved the rest of the command, and it is highly probably that this would have been the case far more generally, but for the stringent hygienic precautions adopted.

As a particular example of the value of such precautions, attention may be appropriately drawn to the appended extracts from the reports of Brevet Maj. E. McClellan, Assistant Surgeon, United States Army (Appendix, p. 60), from which it appears that cholera broke out at various points in the vicinity of Fort Delaware, in fact encircling the post, but did not invade the garrison, although one case, which recovered, occurred in the family of an officer on the island.

On the whole, it must be admitted that the general tenor of army experience, during 1866, is strongly in favour of quarantine, and especially points to the danger to the army incurred by the distribution of recruits or other bodies of men from infected points.

As to the questions of therapeutic agencies, it cannot be said that any new light has been shed upon the existing obscurity of the subject by the army experience. The chief modes of treatment employed are indicated in the appended reports, and the general tendency of the facts recorded must be to direct attention rather to hygienic precautions, intended to mitigate the violence of the epidemic, than to methods of treatment which have hitherto unhappily proved so unsuccessful. Among these hygienic precautions, besides cleanliness, the use of disinfectants, ventilation, proper air-space, &c., especially, attention is directed in the report of Brevet Brigadier-General F. A. McParlin, Surgeon United States Army, to the efficacy of pure drinking water in arresting the spread of the disease, even after it has made its appearance. The troops exposed in New Orleans were, by his direction, supplied with cistern water (rain water) as far as practicable, and where this could not be obtained, distilled water was, in some instances, purchased by the Quarter Master's department. The disease did not spread to any extent among the troops thus supplied, and the majority of the Cavalry and First United States Infantry, and in the Eighty-first coloured, at times when these troops were so situated as, for the most part, to be obliged to use the water of Mississippi River for drinking purposes. The interesting details of this important practical experiment will be found in the appended reports of Surgeon McParlin, and of Assistant Surgeon Hartsuff.

The importance of the character of the drinking water used during the epidemics of cholera had attracted attention in Europe before the date of the recent outbreak in this country, and it had been shown by the Registrar General of England, that the prevalence of the disease in the several districts of London bore a direct proportion to the amount of the organic impurities of the water furnished. Accordingly, when the epidemic made its appearance in New York harbor, attention was at once directed to the character of the drinking water used by the troops, and samples sent to this office were analyzed in the laboratory, by Dr. B. F. Craig. (See Appendix B, p. 61, for Dr. Craig's report.) All these waters contained a considerable quantity of organic impurity, sufficient, under the circumstances, to justify the recommendation of means of purification. This recommendation, so far as known, was not acted upon, and the only point where practical attention was directed to supplying

pure water was at New Orleans, as above stated. The success there obtained has been such as to direct attention anew to Dr. Craig's recommendation.

This circular, like all the others which have been issued from the Surgeon-General's office, contains a great amount of important and instructive information, carefully collected, and skilfully arranged.

ART. XXVII. — *Epidemic Meningitis, or Cerebro-Spinal Meningitis.* By ALFRED STILLÉ, M. D., Professor of the Theory and Practice of Medicine, and of Clinical Medicine in the University of Pennsylvania; Physician to St. Joseph's Hospital, and to the Philadelphia Hospital. 8vo. pp. 178. Philadelphia: Lindsay & Blakiston, 1867.

THIS monograph is a timely publication. The affection of which it treats, in view of the enormous death-rate, whenever and wherever it has prevailed, is one of the most fearful of pestilential diseases. Its occurrence is emphatically an outbreak, taking place unexpectedly, and without forewarning; and prevailing, as it has done, in every diversity of climate and locality, there is no situation secure against its ravages. The opinions of physicians are by no means in unison as regards the nature of the disease, and its proper place in the nosology. They who have been called upon to cope with the disease differ concerning the therapeutical measures which are to be employed. These considerations render a work, comprehensive in its scope, and presenting within a small compass a fair digest of our existing knowledge of the disease, peculiarly acceptable at the present time; and the monograph by Prof. Stillé is just such an one as is needed.

The author has studied the disease clinically, having observed about one hundred and twenty cases at the Philadelphia Hospital during the first quarter of the present year (1867). He has, therefore, the advantage of a large experience. He has collected the observations of a large number of writers, the bibliographical list embracing one hundred and sixty publications. To treat of an important subject comprehensively, and, at the same time, with condensation, is a difficult task in authorship; and in this he has succeeded, the work embracing only one hundred and seventy-eight pages.

After a concise history of past outbreaks of the disease in different countries, the author devotes about sixty pages to its symptoms and diverse forms. The anatomical characters are considered in about twenty pages. The causes occupy eight pages.

In the succeeding twenty-eight pages the prognosis, diagnosis, and the nature of the disease are the topics treated of; and, finally, measures of treatment are discussed in the concluding twenty-seventy pages.

Under the head of diagnosis, the differential characters which distinguish the disease from typhus fever are fully presented; and a candid examination of these characters must, we think, satisfy all minds not committed to a different conviction of the error of regarding the disease as in any way allied to typhus, albeit the latter view has the sanction of high authority. We would commend especially this portion of the work to the attention of the reader. With respect to its pathological character, the conclusion drawn by Prof. Stillé from the facts pertaining to its clinical history, and the appearances after death is, that it is a blood disease, and an inflammation of the cerebro-spinal membranes combined. To quote the author's language, "The inflammatory element, and the septic element are both necessary to constitute the disease; either may be in excess, and overshadow the other. According to the relative predominance of one or the other, the disease assumes more of a typhoid, or more of an inflammatory type, and it is this diversity in its physiognomy which has led to such opposite doctrines in regard to its nature and its nosological affinities." It is needless to add that he rejects the name "spotted fever," which some writers have lately, and, as it seems to us, very unwisely, adopted.

Therapeutical measures are discussed with that judgment and good sense which eminently distinguish Prof. Stillé's writings. The abstraction of blood by means of scarified cups is recommended in sthenic cases, and the danger of this measure in other cases is emphatically stated. The application of cold to the head and spine is favourably considered. Blisters are to be resorted to with care and discrimination. Concerning the use of alcoholic stimulants, we quote the author's words: "On the whole, we regard alcohol as a medicine which ought not to be included in the ordinary and systematic treatment of epidemic meningitis, but as a cordial to be held in reserve against those signs of failure in the power of the nervous system, which call for its administration in diseases of whatever name." The author bears testimony to the value of opium in this disease, and here too, we quote his words: "We were in the habit of giving one grain of opium every hour in very severe, and every two hours in moderately severe cases, and in no instance was produced either narcotism, or even an approach to that condition. Under the influence of the medicine the pain and spasm subsided, the skin grew warmer and the pulse fuller, and the entire condition of the patient more hopeful. It seemed probable, however, that the full benefit of the opium treatment could be received by those only who were subjected to it in the early stages of the attack." The sulphate of quinia he considers as useful only when the effects of malaria are associated with the disease. Of mercury he is unable to speak from any practical knowledge, but he would be disposed to test its value in sthenic cases, were he to encounter another epidemic.

In concluding this brief notice we would express our sense of the value of monographs treating of particular diseases. We consider such publications as constituting a highly important department of medical literature, and by no means to be superseded by works on Practice, or those which treat of the different groups of diseases. This monograph by Prof. Stillé may be taken as a model for similar works devoted to the consideration of a single disease.

A. F.

ART. XXVIII.—*Reports of American Hospitals for the Insane.*

1. *Of the New Hampshire Asylum, for the fiscal year 1866-67.*
2. *Of the Vermont Asylum, for the fiscal year 1866-67.*
3. *Of the Boston Lunatic Hospital, for 16 months, 1866-67.*
4. *Of the Northampton State Hospital, for the fiscal year 1865-66.*
5. *Of the Hartford Retreat, for the fiscal year 1866-67.*
6. *Of the General Hospital of Connecticut, 1867.*
7. *Of the Bloomingdale Asylum, for the year 1866.*
8. *Of the New York State Asylum, for the fiscal year 1865-66.*
9. *Of the New York City Asylum, for the year 1866.*
10. *Of the Texas State Asylum, for 6 months, 1866-67.*

1. In the report of the *New Hampshire Asylum for the Insane*, for the official year 1866-67, Dr. Bancroft, in allusion to lectures, concerts, and other entertainments within-doors, says:—

"These things greatly increase the happiness of patients during their necessary stay in the Asylum; and this is by no means among the least of the good results. Nor is it true of the recent cases only, and the convalescent, but the chronic and even demented, who may have little hope of restoration of the lost harmony of their minds, find in these a pleasant interruption of the monotony of life, and no inconsiderable substitute for the pleasures of general society, from which their diseases necessarily separate them.

"To estimate the whole force of this fact, it is to be borne in mind that, contrary to the popular notion, insanity *disorders* oftener than *destroys* the powers; and that oftentimes, even when the mind may be so far diseased as to require separation from general society, it still retains its activity, its powers to appre-

ciate and enjoy, in many, or even most directions, wholly unimpaired. Hence, much in the way of instruction or entertainment meets an appreciation and a response not so different from that awakened in the general mind as many imagine. To suppose that the felicitous expression of thought and feeling, eloquence, wit, music, beauty, or whatever instructs, interests, or pleases the mind in health, would be wasted on the population of an asylum, is simply to be ignorant of facts.

	Men.	Women.	Total.
Number of patients May 1, 1866	111	125	236
Admitted in course of the year	63	54	117
Whole number	174	179	353
Discharged, including deaths	52	55	107
Remaining May 1, 1867	122	124	246
Of those discharged, there were cured	18	21	39
Died	7	10	17

Causes of death.—Exhaustion from acute mania, 3; from chronic mania, 4; old age, 2; chronic abscess, marasmus, disease of brain, general paralysis, phthisis, pneumonia, epilepsy, and suicide, 1 each.

A new building with thirty-two rooms, for the most demonstrative class of females, is in progress.

2. The numerical history of patients at the *Vermont Asylum for the Insane*, for the official year ending with the close of July, 1867, is as follows:—

	Men.	Women.	Total.
In hospital, August 1, 1866	241	252	493
Admitted in course of the year	85	58	143
Whole number	326	310	636
Discharged, including deaths, ...	61	64	125
Remaining July 31, 1867	265	246	511
Of those discharged, there were cured	—	—	48
Died	—	—	38

“The importance of early treatment in cases of insanity,” says Dr. Rockwell, “is so great that we cannot forbear repeating its necessity. In all other disorders, the friends resort to immediate remedial means for recovery, knowing the great danger of delay. No less important is the necessity of immediate appliances in the treatment of insanity.”

3. For the purpose of making the fiscal year of the *Boston Lunatic Hospital* correspond with the municipal financial year, the last report of that Institution embraces the period from January 1, 1866, to May 1, 1867.

	Men.	Women.	Total.
Patients in the hospital January 1, 1866	94	90	184
Admitted in sixteen months	—	—	89
Whole number	—	—	273
Discharged, including deaths	—	—	99
Remaining	92	82	174
Of those discharged, there were cured	—	—	38
Died	—	—	25

Died of softening of the brain, 6; consumption, 4; exhaustion of acute mania, 3; exhaustion of chronic mania, 3; apoplexy, 2; epilepsy, 2; disease of heart, 2; paralysis, diarrhœa, and syphilis, 1 each.

The following remarks by Dr. Walker will be found interesting:—

“In regard to the use of ether in dental surgery, we can only repeat what has been said before. In many cases treated here, and even elsewhere, in which the inhalation of ether was alleged to be the cause of the disease, it has been found, on careful inquiry, that it had no agency whatever in inducing the existing trouble. In many instances, after the admission of the patient, ether has been administered daily, and even three and four times a day, for weeks in succession,

to subdue excitement, or to induce sleep—in most cases with the happiest results, and in no case with disadvantage. In many instances life has been prolonged and saved by its use. All the cases in which it is said to have been injurious were females, and the history of one would answer for all. The general health had been failing for a long time, and depression of spirits and disinclination to exertion of any kind had become characteristic. Troubled with decaying teeth, under the influence of ether from eight to twenty were extracted at a single sitting. From that hour what was, in the estimation of friends, a mere negative condition, became positive and active, and deep depression, with suicidal tendencies, or excitement with destructive propensities, took the place of listlessness and debility. Remembering how the muscular and robust man will droop and die under a capital operation, what wonder is it that a delicate and nervous woman, exhausted by disease, and worn by loss of food and sleep, finds in the shock of such an operation, the last atom that renders the burden insupportable, and breaks down the last support of self-control."

4. The leading statistics of the *Northampton Lunatic Hospital*, for the official year 1865-66, are as follows:—

	Men.	Women.	Total.
Patients in hospital October 1, 1865	158	194	352
Admitted in course of the year	75	61	136
Whole number	233	255	488
Discharged, including deaths	51	32	83
Remaining September 30, 1866	182	223	405
Of those discharged, there were cured	15	9	24
Died	18	13	31

Died of phthisis, 9; marasmus, 7; epilepsy, 4; paralysis, 3; typhomania, 3; old age, 3; convulsions, 1; pneumonia, 1.

A liberal space in Dr. Earle's report is devoted to moral treatment, and especially to religious services, lectures, and amusements. The statistics of attendance, by persons resident in the hospital, at divine worship on forty-six Sabbaths, at thirty-eight lectures, and at four other entertainments, are given in detail, and a summary of those at the ordinary exercises in chapel on one hundred and seventy-six evenings in the course of the year. The general results are subjoined:—

	Men.	Women.	Total.
Largest number at Sabbath worship	137	173	310
Smallest " " " "	116	138	254
Average number on forty-six Sabbaths	120	159	279
Largest number at lectures	125	151	276
Smallest " " " "	89	131	220
Average " " " "	111	131	242
Largest number at usual evening service	—	—	287
Smallest " " " "	—	—	188
Average " " " "	—	—	208
Number to hear a poem by Dr. Holland	126	178	304
Number at legerdemain exhibition	135	171	306

"The number at chapel depends much upon the attendants; and it is due to some of these to say, that through their efforts, many patients with chronic insanity, who had long been considered unfit, have been induced to attend; and now, improved in appearance, in habits, and in conduct, demean themselves as becomingly as the others."

Among the lectures were some on chemistry, natural philosophy, architecture, and physiology, most of which were illustrated by experiment or by diagrams; and it was intended that in each the subject should be so treated as to satisfy the most intelligent auditor.

At the ordinary evening exercises two hymns and a chapter in the Bible are read, and the former are sung with an accompaniment of instrumental music. On twenty-eight evenings the chapter was substituted by poetry. Of the latter

the report says: "It is believed that it is not too much to say that the characteristics of these pieces, from the solemn majesty of 'Derzhavin's Ode' and 'Thunatopsis,' to the tender pathos of the 'Hermit' and of 'Maud'—the exquisite humour of the logical 'One-Hoss Shay,' and the broader wit of the 'True Story,' were all, to a good extent, appreciated."

5. In the report of the *Retreat for the Insane* at Hartford, Connecticut, for the official year ending with the close of March, 1867, Dr. Butler says:—

"The erection of the new State Hospital, and the abundant provision which must then be made for the indigent insane, will necessarily terminate, at an early period, the relation which has for some twenty-five years existed between this Institution and the State. It will also constitute a new era in the life of the Retreat, freeing it from its embarrassments, which are becoming more and more serious, and enabling you (the Board of Directors) to carry out those improvements and make those advances which, for some years past, have been rendered impossible by the crowded state of the house."

"The Retreat is a charity, founded by donations, but for many years past it has received the insane public beneficiaries of the State. "With the dissolution of our connection with the State, a new era will be marked in the history of the Retreat. It must now go back to carry out more fully than it has done for some years past, the intention of its founders. Its original aim was to provide such a home for the insane that no class of its inmates should fail to find within its walls those liberal, refined, and home-like accommodations which their habits, cultivation, and sympathies demanded."

	Men.	Women.	Total.
Patients in hospital April 1, 1866	125	120	245
Admitted in course of the year	67	115	182
Whole number	192	235	427
Discharged, including deaths	75	112	187
Remaining April 1, 1867	117	123	240
Of those discharged, there were cured	29	61	90
Died	15	14	29

Deaths from exhaustion of acute mania, 5; simple exhaustion, 9; epilepsy, 4; consumption, 2; diarrhœa, 2; old age, 2; paralysis, 2; abscess, suicide, and disease of heart, 1 each.

The report is mostly devoted to a history of the institutions in connection with the State, and suggestions for future action, the most important of the latter being "a more entire reconstruction both of the interior and exterior of the buildings."

6. The *General Hospital for the Insane of the State of Connecticut*, the buildings of which are now in process of erection, is situated "about two miles southeasterly of the city of Middletown; is healthy, sufficiently elevated, easy of access by land and water, commanding extended views of a beautiful region, and, what is of special mark, includes the absolute control of a small stream called 'Butler's Creek,' giving, by the estimates of engineers, an abundant water-head of seventy feet above the foundations of the proposed buildings, with a power adequate to all the uses of water within the walls, and sufficient for all mechanical and ornamental appliances, in shops and on the grounds, which it may be convenient or proper to establish."

"The whole length of the buildings, when completed, is intended to be seven hundred and sixty-eight feet, with accommodations for at least four hundred and fifty patients."

"It is proposed this year to proceed only with the erection of the central building and one wing, with its connecting transept on each side of the centre, of one hundred and twenty-four feet each, making a frontage of three hundred and eight feet, with accommodations for at least two hundred patients."

Dr. A. Marvin Shew was appointed Superintendent, and began his duties in October, 1866, before the plans for the building were matured.

7. The statistical history of the *Bloomington Asylum*, for the year 1866, is as follows:—

	Men.	Women.	Total.
Number of patients January 1	79	92	171
Admitted in course of the year	60	72	132
Whole number	139	164	303
Discharged, including deaths	64	71	135
Remaining December 31	75	93	168
Of those discharged, there were cured	32	34	66
Died	10	14	24

Died with general paralysis, 5; puerperal mania, 4; acute cerebral disease, 4; old age, 3; phthisis, 2; apoplexy, 2; pneumonia, 1; disease of heart, 1.

During the prevalence of cholera in the city, the inmates of this institution were exempt from that disease and other severe forms of intestinal disorder.

This report is much longer than most of those which have come from the pen of Dr. Brown, and is chiefly devoted to a discussion of the subject of the abandonment, for hospital purposes, of the premises of the institution, and the erection of new buildings some miles from the city. He recommends this change, and that the new establishment shall be "where the institution can remain undisturbed by any large settlement for at least fifty years."

8. At the *New York State Lunatic Asylum*, the records of the official year ending with the close of November, 1866, present the following numerical results:—

	Men.	Women.	Total.
Patients at the beginning of the year	309	306	615
Admitted in course of the year	210	178	388
Whole number	519	484	1003
Discharged, including deaths	199	163	362
Remaining at the end of the year	320	321	641
Of those discharged, there were cured	84	80	164
Died	30	14	44

Died with phthisis, 11; general paresis, 9; exhaustion from mental disease, 8; old age and exhaustion, 5; paralysis, 2; apoplexy, chronic meningitis, meningitis and cerebritis, carditis and cerebritis, pulmonary apoplexy, dysentery, gastric carcinoma, suicide, and ulcer of the throat, 1 each.

Suggested by an allusion to the large number of cases of melancholia admitted in the course of the year, Dr. Gray says: "The proportion of cases labouring under this form of insanity has been increasing each year. Whether this is peculiar to this institution, or a more general fact, and dependent on a change in the type of disease, I am unable to say. I am disposed to think, however, our experience not exceptional, and that in insanity, as in other diseases, the type is becoming more asthenic. Among the cases of melancholia I cannot discover the existence of causes, such as embarrassment or failure in business, or afflictions calculated to induce depressing states of thought or emotion. Among the well-marked melancholics are a boy under puberty, and several young girls who had suffered no disappointment, and were subject to no depressing circumstances; yet this little boy, and the other young persons, have been markedly suicidal.

"I regard mania and melancholia as essentially the same, physiologically and pathologically. Both forms of disease are characterized by increased cerebral action and insomnia, and are developed under similar causes and conditions. In mania the increased cerebration is expansive and aggressive, and is manifested in excitement, exaltation, incoherence, and general delusions and perversions; while in melancholia it is introspective and circumscribed, and manifested in intense action within a limited scope—the false ideas depressing in character, and mainly confined to the personality of the sufferer."

9. At the *New York City Lunatic Asylum* the epileptics have been placed in a hospital specially devoted to them, and several new "pavilions," as well as

a "capacious building, of a beautiful and chaste design," intended for a billiard-room, have been erected.

	Men.	Women.	Total.
Number of patients January 1, 1866	223	513	736
Admitted in course of the year	247	267	514
Re-transferred from Almshouse	—	80	80
Whole number	470	860	1330
Discharged, including deaths	211	352	563
Remaining, December 31, 1866	259	508	767
Of those discharged, there were cured	—	—	162
Died	64	123	187

Died of cholera, 69; asthenia, 17; phthisis, 15; paralysis générale, 15; epilepsy, 8; exhaustion from mania, 7; diarrhœa, 6; pneumonia, 6; chronic diarrhœa, 6; marasmus, 5; cerebral congestion, 4; paralysis, 3; senectus, 3; pleurisy, 3; dysentery, 3; typhomania, 2; scorbutus, 2; peritonitis, 2; softening of the brain, 2; inanition, hypertrophy of heart, fatty degeneration of heart, chorea, typhus fever, tuberculosis, apoplexy, erysipelas, suicide, and accidental drowning, 1 each.

"The first case of cholera occurred on the 22d of July, and the last on the 27th of September. Twenty-five male patients were attacked, of whom nineteen died, and seventy-one females, of whom fifty-two died—making a total of ninety-six cases.

"No cases," says Dr. Parsons, "were considered as cholera, save such as were well marked and unmistakable, with cold, blue skin, contracted pulse, anxious countenance, husky voice, &c. The occurrence of rice-water discharges was not depended upon as a diagnostic sign."

"There were one hundred and fourteen cases diagnosed as acute diarrhœa during the prevalence of the epidemic. A certain percentage of these are known to have had the characteristic rice-water discharges; many of the others, without doubt, had the choleric diarrhœa, which was checked by the timely administration of remedies and by rest in a recumbent posture."

10. By the report from the *Texas State Lunatic Asylum*, embracing the period from August 21, 1866, to March 1, 1867, we are informed that "the Asylum is now in a most prosperous condition, and accomplishing, even beyond expectation, the beneficent ends for which it was organized."

The institution is now under the superintendence of Dr. W. P. Beall.

	Men.	Women.	Total.
Patients August 20, 1866	27	25	52
Admitted	10	7	17
Discharged, including deaths	11	10	21
Remaining, March 1, 1867	26	22	48
Of those discharged, there were cured	6	5	11
Died	2	—	2

The hospital will accommodate but about seventy-five patients. Dr. Beall urges its enlargement. A separate building has been purchased for insane freedmen.

P. E.

ART. XXIX.—*Mechanical Therapeutics; a Practical Treatise on Surgical Apparatus, Appliances, and Elementary Operations; embracing Bandaging, Minor Surgery, Orthopraxy, and the Treatment of Fractures and Dislocations.* By PHILIP S. WALES, M. D., Surgeon U. S. N. With six hundred and forty-two Illustrations. 8vo. pp. 685, with Index. Philadelphia: Henry C. Lea, 1867.

This volume will be a useful acquisition to a large number of the working members of the medical profession in this country. The idle and the ignorant will be apt to resort to it on account of the ease and certainty

with which its many practical hints and precepts may be appealed to in their emergencies, and to help them out of trouble: and multitudes of better qualified and worthier practitioners will find material aid and encouragement in its pages which they could nowhere else obtain to the same extent in so convenient a form. It must prove scarcely less desirable to teachers and students, on account of the general clearness and brevity of the descriptions, the directly practical character of the illustrative explanations and appreciations, and the convenient order of arrangement; at the same time that the range of topics is so comprehensive that something may be found in relation to almost every question in mechanical surgery not involving major operations. This is high praise; but it is no more than a careful examination obliges us to give. We do not pretend to say that there is not occasional evidence of inexperienced authorship, and that there are no passages which might have been improved by more attention to the composition or more careful revision for the press. These are minor matters, however, and are certainly excusable in a first edition, even if more frequent and observable than they really are. Nor are we disposed to deny that some few points here and there may have been overlooked, or may seem to experts in the several departments to have been imperfectly developed; and that certain questions of doctrine, both in theory and practice, may not be in accordance with our notions, and perhaps with the views of generally accepted authorities. Notwithstanding all these scarcely avoidable exceptions, there is less than usual to find fault with in a book which, being the pioneer of its particular class, is abundantly supplied with original and novel matter, and yet is intended to be carefully restricted within the bounds of authority not only in the beaten track of minor surgery, but in the less trodden field of special mechanical therapeutics.

One of the most valuable features of the volume is due, in some measure, to what might reasonably have been offered as an excuse for a greatly inferior result in the book-making aspect of the undertaking. This is the fact that a considerable portion of it was prepared by the author in short intervals of leisure from day to day while in charge of large hospitals during the war at different stations on the Mississippi, in the Gulf, and on the South Atlantic coast. It was in the midst of the smoke and din, as well as the carnage of battle, at sea and on land, and during long periods of hospital service among the thousands of the victims of those bloody actions, that very many of the ideas of his pages were tested and reduced to their present shape. Previous thorough hospital training at home, and active service in naval stations abroad, had well prepared our author to take advantage of the unequalled opportunities afforded by the great contest; and a strong natural aptitude seems to have combined with the influence of circumstances to give a practical character to his writing, which the subsequent duties of collation and compilation have not apparently diminished. Indeed, considering the incidents of his authorship, and the vast opportunities for observation afforded him, he appears to have kept himself, and his personal views and experience, quite sufficiently in the background, and rather more so than some of his readers may prefer.

We need scarcely say that there never was a time in the history of this country when a greater interest could be taken in such a work, or its importance more universally acknowledged; and we sincerely trust there never again will be a time when its peculiar merits could be fairly and accurately estimated by so many whose interest had been aroused, and ability to understand had been established by a similar experience. We look upon this, and many other more or less analogous offerings, as particularly gratifying to the members of a profession which has the advance of science and humanity for its guiding principle; and which thus proves, to their votaries, that neither the lessons nor the chances of the trial have been altogether thrown away by that profession in the fields and hospitals of our war.

The design of the author was "to place in the hands of students and practitioners of medicine a systematized and condensed description of surgical dressings, apparatus, and elementary operations, drawn from the writings and teachings of the ablest surgeons in America and Europe. In its preparation care has been taken to adapt it also to the necessities of those willing to enter

the public service" by furnishing the requisite "more minute and extended information upon these subjects than can be obtained from the ordinary textbooks." He "has availed himself of the advantages offered him in hospital and private practice, and has submitted to actual trial most of the plans of treatment described in the work, noting at the time their advantages and disadvantages in the cases in which they have been recommended by their authors. All embarrassing generalities have been avoided as far as possible in the descriptions, each step in the preparation and application of apparatus being detailed." Many engravings for illustration have been drawn from the works of well-known leading authors, and from recent foreign publications on Minor Surgery and Orthopraxy; but quite a considerable number are entirely new, or comparatively rare in American publications. The copiousness of illustration is one of the most commendable qualifications of such a *vade mecum*, and certainly adds much to the interest and value of this one, inasmuch as it far exceeds all others of its kind in this respect. Some of these engravings are old acquaintances, which we should be glad to see either dispensed with or improved; but many others are admirable in purpose and in execution.

It is impossible to present a detailed analysis or exposition of a systematic work of this character, or to engage in an elaborate discussion of its points of theory and practice, although the subject is entitled to far more consideration than was formerly the fashion to accord to it. We trust that a wiser state of feeling, resulting from a widely greater amount of surgical experience, may lead to a higher estimate in general of these small things of the art and science, without which the great results must inevitably fail. It is to be hoped that the essay of Dr. Wales may have a good effect in urging on this more rational view of the importance of his topics, as well as in furthering the progress of the study as an indispensable branch of professional education.

In the endeavour to show to some extent the manner in which the promises of the preface are sustained, we may say that the work is divided into five parts: On the Apparatus of Dressing; On Mechanical Bandages and Apparatus; On Fractures; On Dislocations; On the Minor Operations of Surgery. These parts are severally divided into chapters and sections in which the various topics, including several unusual or additional, if not new ones, are carefully discussed. Bandages are systematically and very fully and perspicuously exhibited in the order of the classical Gerdy. This is the most trying part of a minor surgery treatise, although the most hackneyed and essential. In this instance, we think the author has succeeded in presenting concise and lucid directions and descriptions. He has also contrived to add several new bandages and to intersperse many useful mementoes derived from his personal experience, which greatly increase the interest of these chapters. Under the head of Mechanical Bandages and Apparatus, we have several particularly useful sections in which the treatment of deformities and the application of the various mechanical arrangements are treated of in accordance with the teaching of the leading and latest authorities in this country and Europe. Specialists may not be satisfied with the amount and extent of the attention paid to these subjects; but it appears to us sufficient for the purpose of an ordinary guide, and to stimulate to further inquiry where that is practicable. Several expedients are new, and so are a number of modifications suggested by the author; while here, as elsewhere, he does not fail to present a precise appreciation based upon his own investigations, by which, with the aid of the principles laid down, and the typical machinery displayed, the surgical reader will be able to construct his extemporaneous applications sufficiently well. The chapter on Apparatus for Remedying the Loss of Parts, the whole of which is curious and instructive, is particularly important, as well as novel, in containing sections devoted to original accounts and examinations of the different examples of artificial legs and arms. These passages are not only valuable in themselves, as determining the actual and specific superiority of certain makes of artificial limbs, but in the practical instruction they afford, on the basis of a very large experience, upon this subject of prosthesis, which has become so commanding in its interest among us.

The first part, On the Apparatus of Dressing, treats, in addition to "second

pieces of dressing, or bandages, properly so called," upon the instruments of dressing; the "first pieces of dressing," in which a great variety of dressing materials are spoken of either as make-shifts, or for ordinary use; the use of topical remedies; the use of water in surgical diseases and injuries, locally in various ways and generally in bathing; injections; the use of gases and vapours, for atmospheric purification, application externally, and to the interior cavities. In these chapters, as elsewhere, may be found numerous suggestions concerning materials and methods of operation, which are worthy of notice, as characteristic, if not original. Of these, might be mentioned the use of sawdust as a substitute for, and in some cases preferable to bran, as a dressing in compound fractures; the surgical wallet for boat service in naval warfare; the use and disuse of water-dressings; the use of inhalers, fumigations, and atomisers; the application of dry heat and cold by means of the water-proof sacs and tubes; the local medication of the nasal fossa, and of the meatus auditorius. In regard to the irrigation of the nasal fossa his plan, although not new, is excellent, but we doubt whether it is equal to the admirable douche of Thudichum, by the simple tube applied to one nostril with the other open, which has already become so popular, but which we regret to find has escaped his notice.

Among the instruments of his own invention used by the author, one of the most ingenious and useful is an arterial compressor, of which he introduces the following description in the excellent chapter on bandaging in general:—

"First, two well tempered steel rings, of suitable diameter, were selected and connected by two metallic bars, keeping the rings from each other at the distance of the shoulder from a point just above the olecranon. One of these bars had a width of two inches, was concave, and fitted to the outside of the limb; the other was narrow and supported three pads, at equal distances of its length, at the ends of long screws working through it; this bar was also movable, to correspond to the course of the brachial artery, and could be secured at either end by thumb-screws. This apparatus, covered with buckskin, is ready for use; and, when properly adjusted, pressure is brought to bear upon the artery by the pads being alternately screwed against it, or, what I think better, by bringing them all down lightly; for the force necessary to interrupt the flow of blood in the artery is thus distributed among the three pads, and hence, a third part only of it is exercised on any one point at once."

A very simple and equally ingenious internal rectum supporter, contrived and used for an inveterate prolapsus ani, is thus described in the chapter on remedies for loss of function:—

"An apparatus composed of a loop of No. 6 wire, four inches long, and curved to fit the anterior surface of the sacrum, having a stem at its base an inch and a half long, and formed of two wires of the loop twisted together. The end of this stem was soldered to a wire frame consisting of a single wire crossing the perineum antero-posteriorly, and dividing in front and behind into two branches terminating in large eyes, through which a cord was passed to secure the apparatus to the person. By this means the bowel was retained in its normal situation during defecation, by the instrument holding the posterior wall of the rectum against the curve of the sacrum."

This arrangement of the wire doubtless answered an excellent temporary purpose, as it might upon occasion serve equally well as a supporter in the vagina, but would require a very careful watching, if not even a gutta-percha coating, to prevent it from cutting its way through the soft parts which it was employed to support.

We should like very well to devote some time to the consideration of the "Parts" on fractures and on dislocations; since, as is not always the case in books of this class, these are among the most complete and practical, if not actually the most so, in the volume. They are full, clear, and generally precise, and are amply illustrated with figures of the various injuries, and of the most approved apparatus employed for their relief. In fact, there is very little to be desired in either of these parts to render them complete enough for all ordinary purposes as condensed practical *exposés* of the subjects of which they treat; while they are enriched with some ideas upon modes of treatment and apparatus, which are worth attention as suggesting really new and positive improvements. Among

these latter may be mentioned the author's apparatus, already described in this Journal, for fractured jaw. Some unusual views in regard to the principle of pressing on the lower angle of the scapula, as advocated at the Pennsylvania Hospital, in treating fractured clavicle, are entitled to notice. So also, are the modes, emanating from the same hospital, of treating fracture of the patella and of the olecranon, by means of the Spanish windlass or garotte bandage and a broad straight splint, with notches or projecting cleets, around which the bandage is passed in coming down diagonally from above the fragments of patella or olecranon, to be tightened by the twisting of the stick behind the splint. We have repeatedly employed this simple method with entire success in both forms of fracture, and have not found it always necessary to combine with the use of the oblique circular bandage, around the tendon of the rectus femoris above and the wide splint below, any compressing bandage or splint over the rectus and other portions of the quadriceps extensor muscle of the thigh, or, in case of the olecranon, over the triceps extensor cubitis. Such compression can be readily effected, if desirable in any case, without constriction, by taking care to have the splint of a sufficient width. The only marked peculiarity in the application of this patella dressing is the employment of the Spanish windlass as a graduating tightener under the splint. The greater width of the splint, to obviate constriction, is of over fifty years' standing in the Pennsylvania Hospital. It is in accordance with the principle urged by Boyer, was described by Lonsdale and others, in England, more than twenty-five years ago, and is probably a much older expedient in dealing with fracture of the patella, as our author appears to know. He presents us, also, with a woodcut and description of the elegant and effective arrangement on this non-constricting principle, of Surgeon P. Lansdale, U. S. N., in which the upper and lower fragments of the patella are acted on by means of crescentic pads, these being screwed into place through the summits of narrow iron arcs or loops which span the knee without touching it, and run backwards obliquely, to cross each other and be fastened, at proper distances, on each side and above and below, to the edges of the splint. The loops or arcs might, of course, be made of any available material of sufficient strength.

The concluding part presents us with a sufficiently full account of all the elementary operations of surgery. This is furnished, not only with abundant illustrations, but various minor hints suggested by the experience of the author, and with some of the latest improvements in instrumental therapeutics; among which may be noticed the subject of electrical cauterization. An excellent historical and practical summary of Anæsthesia, local and general, appropriately terminates the book. In this chapter we find, condensed in a few pages, a great deal of useful information and advice, in the course of which the author manages to present not only the result of his own experience, but those of the leading writers upon all of the important questions relating to the use of anæsthetics.

In conclusion, we think the Mechanical Therapeutics of Dr. Wales may be safely recommended to practitioners, teachers, and students, as a safe and convenient guide in mechanical and elementary surgery.

Although it may be regarded by some as rather bulky for its special purpose, the variety of subjects treated might easily be allowed to occupy a larger volume. These subjects are so associated with one another in a natural order of succession, and frequently suggestive manner, as to render the whole a compend which is sufficiently systematic and methodical without being dry. A few typographical errors in the use of proper names, and a general absence of specific references to the authors quoted are observable. These defects, however, are not material to the soundness of the work as a surgeon's and surgical dresser's guide. It is manifestly not the production of a book-maker, but is the result of a labour of love growing almost spontaneously out of the unusual opportunities of a long-continued hospital life in the midst of active war. Its recent completion secures the advantage of being *au courant* in a great degree with the latest improvements, and with the rapid accumulation of surgical expedients which characterizes the advancement of the surgery of the day. Having thus completed a summary of the practical knowledge within his reach in his sphere of duty, and subsequently at the great centres of science in this country, and

remembering how much he had felt the want of such a portable series of memoranda for himself and his assistants, it was natural to suppose that a similar desire existed beyond his personal associations, which this collection of notes would be likely, in some measure, to satisfy. We run no very great risk in venturing the opinion that both author and publisher have done their work well enough to justify our expectation of an early exhaustion of their first edition.

E. H.

ART. XXX.—*Transactions of American State Medical Societies*:—

1. *Minutes of the Proceedings of the Thirteenth Annual Meeting of the Medical Society of the State of North Carolina, held at Raleigh, 5th June, 1866.* 8vo. pp. 14.
2. *Minutes of Proceedings of the Fourteenth Annual Meeting of the same Society, held at Tarboro', 15th May, 1867.* 8vo. pp. 30.
3. *Transactions of the Medical Society of the State of Kansas, for the year 1867.* 8vo. pp. 76.
4. *Medical Communications of the Massachusetts Medical Society.* Vol. XI. No. 1, 1867. Second Series—Vol. VII. Part I. 8vo. pp. 92.
5. *Transactions of the Twenty-Second Annual Meeting of the Ohio State Medical Society, held at Yellow Springs, Ohio, June 11 and 12, 1867.* 8vo. pp. 82.
6. *Transactions of the Medical Society of the State of Pennsylvania, at its Eighteenth Annual Session, held at Pittsburg, June, 1867.* Fourth Series—Part III. 8vo. pp. 147.

1 and 2. THE Minutes of the two Annual Meetings of the *Medical Society of the State of North Carolina* contain but few papers of any great interest. At the session of 1867 a communication was read from Dr. THOMAS F. WOOD, of Wilmington, N. C., on "The non-identity of Vaccinia and Variola." The chief facts adduced by Dr. W. to prove this non-identity of the two diseases are the negative testimony of certain European practitioners, and that of certain medical gentlemen of the South, who, in all their attempts to communicate either genuine variola, or the vaccine disease to the cow by inoculation, or by endeavouring, in every other possible manner to infect her with the variolous matter. To the same intent Dr. W. also adduces the fact that the true vaccine disease has appeared spontaneously in the cow in the United States, and in situations where no variolous infection could have reached the animals attacked.

A few surgical cases are briefly reported by Dr. E. B. HAYWOOD; all of them worthy, perhaps, of being recorded, but presenting no feature of especial interest.

Dr. C. P. O'HAGAN relates a case of "Laceration of the Peritoneum and Destruction of the Recto-Vaginal septum," which is of deep interest, as well from the injury, the length of time that had elapsed since its occurrence, namely, eight years, the entire want of proper material and instruments for forming the sutures, especially those in the deep-seated parts, after excision and trimming of the ruptured surfaces so as to insure their perfect coaptation, as also from the fact that by the end of three weeks from the time the operation was performed, it was found to be completely successful, and the patient was enabled to return to her home, twenty miles distant, in the enjoyment of all her functions, and entirely rescued from a life of misery and suffering to one of health and comfort. At the period when the accident took place the patient was twenty years of age, healthy and well formed. The rupture occurred during labour with her first child, a breech presentation. The ligature made use of by Dr. O'H. was a piece of common iron wire about $\frac{1}{16}$ of an inch thick; this was carried through the thick fleshy tissues that bounded the edges of the rupture by a common curved needle, three inches long, without any instrument to guide it through the deep-seated parts, where the ligatures were sustained by clamps fashioned out of wood by the operator.

Dr. R. H. WINBORNE furnishes a short sketch of the Topography and Diseases of Chowan County. This county lies upon the northern bank of Chowan River and Albemarle Sound. It is intersected by numerous swamps and creeks. Like most of the tide-water region of the State, the border of the streams present large tracts of marsh. The soil of the county is, in some parts, light and silicious, in others, heavy and alluvial, in others, again, stiff and aluminous.

Miasmatic fevers constitute the leading epidemic disease of the county; during 1866 they prevailed more generally than at any season since 1855. Their prevalence began much earlier than usual; the number of cases which occurred during the summer months equalling that which usually appear during the autumn. Both intermittents and remittents were mostly of the double-tertian type.

The two preceding seasons were unusually dry, while the water level beneath the earth's surface had been lower during the season of 1866 than it had been observed for many years previous.

In the early part of last summer dysentery prevailed to some extent, but was quite amenable to treatment. Diphtheria prevailed sporadically throughout the year. Dr. W. remarks that solid caustic and strong irritating gargles he found to be productive of more harm than good, often causing extensive inflammation and swelling of the cervical and submaxillary glands.

During the autumnal months serous or "colliquative" diarrhœa prevailed to some extent. From its sudden onset, rapid course, and fatal termination it was, at first, feared that it was the prelude to a visitation of epidemic cholera; happily, the fear proved to be unfounded.

In cases of pneumonia bloodletting was not practised by the physicians of Dr. W.'s vicinity, and he believes it was rarely demanded. In the very outset of the attack, however, when there is great pain and difficulty of respiration, and the patient is robust and plethoric, bloodletting may be demanded for the relief of these symptoms, but beyond this Dr. W. doubts its utility in the disease, as it occurs in his section of country.

Within the last six or seven years Dr. W. has met with nine cases of puerperal eclampsia. Seven occurred in primiparæ. Five were ante-partum, four post-partum. In two of the ante-partum cases the mothers and children survived; in two the infants perished, but the mothers survived. In one both mother and child perished. Three of the post-partum cases, both mothers and infants survived, in one the mother survived and the children, twins, supposed to be born prematurely, perished. In the treatment of puerperal convulsions Dr. W., in order to relieve the tension of the bloodvessels of the brain, bleeds as often and as much as the patient will bear—applies cold applications to the head, keeps the patient under the influence of chloroform; delivers as soon as possible by such means as each case may require. Then puts the patient to bed in a quiet, darkened room, giving, for three or four days, no medicine save some gentle diuretic—he prefers the salts of potash. He keeps the bladder empty by the daily use of the catheter. At the end of three or four days, if the bowels are not previously open, he effects this by giving castor oil. He is satisfied that, after delivery, more should be trusted to nature, and less to medicines than we are allowed to do in our anxieties for the safety of our patients and under importunities of their friends.

"In post-partum convulsions, after free bleeding, I have found," says Dr. W., "no difficulty in arresting them by the administration of from 60 to 80 drops of tinctura opii, repeated in 20 drop doses upon each recurrence of convulsions. Of four cases thus treated, in three the convulsions were promptly arrested; in the fourth but a single convulsion ensued."

3. The session for 1867 of the *Medical Society of the State of Kansas*, which we believe is an entirely new organization, was opened by an admirable address by its retiring President, Dr. C. A. LOGAN.

The address is followed by the "Report of the Committee on Surgery," by Dr. M. BAILEY, of Topeka, which is devoted to the subject of mal-practice.

The second paper is on the "Application of Water, and its Effects as a Local Agent," by Dr. J. L. PRENTISS. Physicians and surgeons are becoming every

day more and more convinced of the very favourable effects to be derived from the local application of simple unmedicated water in a large number of our common maladies, and nearly all the accidents seen by the surgeon.

The third paper is the "Report of the Committee on Obstetrics," by Dr. C. A. LOGAN. This is a very plain common sense notice of the diseases occurring during gestation and parturition. Among those of the first period, the most important is convulsion, of which a short and, as far as it goes, instructive account is given. Placenta prævia receives next a rapid notice; without, however, any new facts or observations being adduced to throw light upon the cause of abnormal implantation of the placenta, or to point out the best plan for its treatment in order to obviate any danger from its usually attendant hemorrhage.

Dr. T. SINKS presents a report on "Climatology," as it refers to Kansas. Though brief and imperfect, it presents a sufficiency of reliable data to establish, *a priori*, the fact that the climate is one especially favourable to the promotion and maintenance of health; in proof of which reference is made to the reports furnished by physicians in respect to the character and frequency of disease in the State. Malarial fever, in all its varieties, prevails in Kansas, but not with that intensity which characterizes it in the more central portions of Mississippi Valley. Pernicious fever is of quite unfrequent occurrence; the bilious remittent, though more common, is seldom fatal. The same thing prevails in reference to the diseases of the respiratory organs, which seems somewhat surprising to those who merely take into account the extreme sudden transitions of temperature so common during the colder months. Thus far in the history of the State no wide-spread epidemic of any contagious or infectious disorder has prevailed, although sporadic cases of them all have occurred from time to time. The year 1866 is represented as having been a remarkable one. The highest point reached by the thermometer during the summer was 96°—and that only a few times. The relative humidity of the atmosphere was below the average. The month of September, when the rapid decay of vegetation usually ushers in the season of malarious fevers in their most intense form, was unusually cold, while swarms of locusts devoured every green thing before it had time to decay; the people, thus freed from malarial poison, rejoiced in plenitude of health.

Dr. J. W. BROCK presents a very concise, but tolerably good account of diphtheria. It contains nothing new in regard to the character or treatment of the disease.

Dr. J. W. PARSONS relates an instance of a family of seven persons poisoned by partaking of a can of milk in which there had been introduced three drachms of arsenic. Some two hours subsequently, when the usual symptoms of arsenical poisoning had become developed, a strong solution of sulphate of zinc was given until free vomiting was produced. A mixture was then freely administered of subcarbonate of iron in water, of the consistency of cream, and as fast as it was vomited the zinc was repeated and followed by the iron. At the termination of a few hours the patients fell asleep, and at daylight next morning they awoke convalescent.

The same gentleman furnishes a short paper in illustration of the efficacy of the persulphate of iron as a hæmostatic.

Then follows the account, by Dr. R. MORRIS, of a case of strangulated femoral hernia, in which an operation was performed, followed by complete recovery of the patient. The case presents no feature of especial importance.

Dr. CHARLES C. SHOYER relates his experience in regard to "the malarial miasm pervading non-malarial diseases;" under which clumsy title he designs to express the fact, well known to physicians who practise in malarial districts, that all the diseases which occur there in certain seasons, will exhibit a character of periodicity, and demand the administration of quinia for their cure.

The concluding paper of the Kansas transactions is on "Infantile or Oblique Fracture of the Vertebra," by Dr. W. E. TURNER. If the views of Dr. T. in respect to the nature and treatment of the accident described by him be correct we owe a debt of gratitude to him for a revelation in surgery of the utmost importance. For centuries, we are told, surgeons have, in consequence of the obscurity with which the accident is at first involved, mistaken and treated it

for some general ailment, until the disease has made such progress before its true character becomes evident, as to baffle the skill of the surgeon.

From the following paragraph the reader will learn what Dr. T. sets down as some of the consequences of oblique fracture of the vertebrae in infants:—

“Many writers on the subject of caries of the vertebrae, disease of the spine, speak of it in general terms, as though it were of just as frequent occurrence in one region as in another; but we find it occurring in one or other of two regions much more frequently than in other portions of the spine. It is found oftener in the cervical and dorsal vertebrae, but by far the most frequently in the region of the sixth or seventh dorsal vertebra. Now, when we find a disease showing a decided tendency to certain vertebrae of a particular region, and knowing that they are all composed of the same elementary constituent, we must look for some other cause than one acting generally, as a tuberculous or strumous diathesis. I think we can find *the true cause in an oblique fracture of the vertebrae*. In this accident we find the same train of symptoms that different writers call caries of the vertebrae, anterior curvature of the spine, &c.”

4. The *Massachusetts Medical Communications* do not contain any paper, scientific or practical, in either of the branches of medicine. Besides the Journal of Proceedings of the Massachusetts Medical Society for 1867, and some short obituary notices of its deceased members, there only remains the Address of Dr. HORACE P. WAKEFIELD, on “The Duties of the Medical Profession.” This is unquestionably a production of much merit, full of sound and opportune advice to the medical profession, pronounced in a clear, fluent style, marked by a sufficient degree of earnestness, and with a kindliness of manner most attractive.

5. The *Ohio Transactions* open with the valedictory address of the retiring President, Dr. J. W. HAMILTON. Its theme is, “Some of the Wants, or Supposed Wants, of the Medical Profession of Ohio, more particularly with reference to Legislation.”

The two chief wants of the medical profession of Ohio, to which Dr. H. has especial reference, are, first, the legalization of the pursuit of practical anatomy under proper regulations, and the protection by law of the medical profession from the intrusion into its ranks of uneducated and otherwise unqualified individuals.

A report follows the address, from a committee composed of Drs. E. PEARCE and B. S. BROWN, on the “Incurable Insane” of the State of Ohio.

Dr. G. W. MARIS, of Columbus, Ohio, presents some “Remarks on Medical Ethics.” The motive which prompted these remarks is highly praiseworthy, while the remarks themselves are sound, practical, and well timed.

Dr. J. DAVIS, of Cincinnati, gives a brief account of what he claims to have been a successful treatment of cholera, pursued by him. It consists in a combination—calomel one grain, tannin two grains, and piperine one grain—to be rubbed up with a sufficiency of prepared chalk and sugar to cause an intimate blending of the piperine with the other articles. The above powder was given every ten or fifteen minutes, and not oftener in any stage of the disease, and continued until the interval between the evacuations was lengthened to three or four hours. Then the powders were given less frequently. So soon as the stools became somewhat consistent, and of a dark colour, the calomel was omitted, and the powder, without it, continued as before until the diarrhoea was subdued, when the astringent was omitted. The piperine, often combined with iron or quinia, was still continued until complete reaction ensued. Generally, however, as soon as the diarrhoea was arrested, reaction occurred without a stimulant being required, and the patient did well, very generally without additional medication. To restrain the vomiting, Dr. D. resorts to mustard poultices to the stomach, and if this failed, he gave every thirty minutes a small dose of creasote and chloroform. However severe the thirst, not more than a tablespoonful of water was given every ten or fifteen minutes; or, when agreeable to the patient, pieces of ice were allowed to be held in the mouth. So soon as the water was retained in the stomach it was given more liberally

in order to restore the wasted fluids of the body. The volume concludes with short biographical notices of deceased members of the Society.

6. The *Pennsylvania Transactions* commence with the Annual Address, by the President, Dr. JAMES KING, of Alleghany County, on the importance to the physician of a knowledge of the nervous system. A very instructive sketch is given of the light that has been thrown by recent investigations on the physiology of that system, and the part which interruption or disturbance of its functions plays in the production of certain morbid phenomena.

From the very few detailed reports from county societies that were presented at the last session of the State Society, we learn that for the twelve months preceding the 12th of June, 1867, those districts of Pennsylvania embraced in the reports were marked by a degree of health not experienced for many preceding years. No epidemic of any extent or violence occurred, the usual endemic maladies were rare and mild, and even sporadic diseases were, it appears, comparatively few in number, and less fatal in character than before. The only portion of the State from whence a different statement was heard is Alleghany County. The report from the Medical Society of that county commences with the remark, that "during the year 1866 the amount of sickness and mortality was probably greater than usual, though we have had to chronicle no wide-spread epidemic."

This almost unprecedented healthfulness which prevailed throughout the greater portion of the State of Pennsylvania during the past year, and which still continues, is the more remarkable from the fact that the meteorology of most part of the State during the same period was precisely such as would have led us to predict rather the prevalence of sickness than of health. Heavy continued rains, overflowing streams, inundated fields, rapid and considerable transitions of temperature, in large sections of the State were contrasted in others by drought and heat, preceded or quickly succeeded by a damp and decidedly cool atmosphere.

Periodical fevers, which, in former years, formed so prominent an endemic of the autumnal months in many portions of Pennsylvania, we find from the reports before us, are now of far less frequent and extensive occurrence, having, in some localities, entirely disappeared. It is remarked in the report from Lycoming County—and the remark will admit of a more general application—that the intermittent and remittent fevers in that part of the State, have a sort of periodicity in their recurrence, appearing about every fifteen or twenty years, continuing to prevail for a period, increasing constantly in intensity, for about three years, when they suddenly diminish, and for a series of years disappear almost entirely.

Typhoid fever appears, in a very great degree, to have taken the place of the intermittents and remittents of former years; even in paludial districts, fevers having, at first, a distinct remittent character, soon assume the true typhoid form.

On the pathology, etiology, or treatment of typhoid, the reports contained in the volume of *Pennsylvania Transactions* furnish some very interesting observations; nothing, however, that can be considered new.

Scarlatina prevailed to a slight extent in Pittsburgh, and other portions of Alleghany County. It does not seem to have been productive of any great degree of mortality. A protracted and moderately severe epidemic of the disease prevailed quite extensively throughout Chester County during the latter half of 1866. Scarlatina prevailed, also, to some extent in different parts of Montgomery County. Dr. Corson calls attention to the marked beneficial influence, in the latter, of ice applied externally to the outside of the neck over the inflamed glands. Other practitioners who have employed the same local use of the ice, bear testimony to its decidedly beneficial action.

Erysipelas is noticed as having occurred in the reports from Beaver, Lehigh, and Westmoreland. In the first county very extensively. In a part of Lehigh County the disease is said to have presented, in a few cases, a character of great malignancy. In general, however, it would appear that its character was mild and benignant.

Dysentery, of a sthenic type in the first of the year 1866, and of an asthenic form during the summer and autumn, is noticed as having occurred in one locality of Alleghany County, and of a mild form during the summer of 1866, in the western part of Beaver.

Cholera visited, during 1866, a few localities in the interior of the State, but in neither, although it presented in all, the well-marked character of the epidemic disease, did it spread to any great extent. In Pittsburg, where it first appeared in August, 1866, thirty deaths from it took place. The subjects of the disease were chiefly adults, and in the greater number of cases of intemperate habits. In West Chester, Chester County, and its immediate vicinity, ten cases of cholera occurred, of which nine proved fatal. A single case is reported to have occurred in Lycoming County. In the month of October a few cases occurred at different localities in Montgomery County, six were in the neighbourhood of Plymouth Meeting-House, of which two died and four recovered. In the vicinity of Norristown, also, some six cases are referred to; of these about one half proved fatal.

In one district of Beaver County many cases of cholera morbus are reported to have occurred. The cause of the attack, in most of these cases, appeared to have been imprudence or excess in diet. The disease is described, also, as of frequent occurrence in Lehigh County. In Schuylkill County cholera morbus assumed a very severe and fatal character.

Throughout many, if not all, of the counties from which reports were received, diarrhœa and bowel complaints generally, appear to have been rife during the summer of 1866.

Diphtheria, in a mild form, prevailed as an epidemic of slight extent in some localities, while sporadic cases were observed in other portions of the State.

The ordinary affections of the respiratory organs prevailed generally to about the same extent, during the colder season of the year, as customary. Pneumonia, perhaps, to an unusual extent. In the western portion of Beaver County, catarrhal fever, complicated mostly with broncho-pneumonia or peritonitis, and sometimes with both in the same patient, prevailed during the months of December, January, and February. Its subjects were mostly children, from infancy to twelve years of age. It assumed a character of great malignancy, dark-coloured excretions occurring from the pulmonary and enteric mucous surfaces. The duration of the disease varied from three days to two weeks. About ten per cent. of the cases had a fatal termination.

Consumption appears to have caused a large mortality in different parts of the interior of Pennsylvania. Ten per cent. of the entire number of deaths in Pittsburg, Alleghany County, during 1866 were ascribed to the disease, while Dr. Anawalt, of Greensburg, Westmoreland County, remarks that, during 1866 he had "met with more cases of phthisis pulmonalis than ever before in the same time."

From the many cases of which a notice is given in the reports contained in the present volume, we select the following case of *extra-uterine gestation*, which came under the care of Dr. J. K. LEVAN, of Leesport, Berks Co.

In the winter of 1861, the Doctor was summoned to see Mrs. B., about fifty years of age, who informed him that she had enjoyed excellent health for one year after her marriage, when she began to suffer from severe pain at the lower part of the abdomen, which, later, began gradually to enlarge, reaching, at length, an alarming size. A physician was called in, and pronounced the swelling to be dropsical, and treated it accordingly. Finally an opening through the walls of the abdomen, about half an inch below the umbilicus and directly to the right of the umbilicus, occurred spontaneously, and gave rise to the discharge of about a gallon of a yellowish pus-like fluid. The opening now somewhat closed, but remained as a running sore for upwards of thirty years.

The patient in the mean time enjoyed tolerably good health, and became the mother of eight children; the first of which was born four years after the large discharge of pus, as above. A few years after the birth of her last child, the sore became more angry and painful, and the vital powers of the patient seemed fast declining. Dr. Levin, after a thorough examination, felt convinced that the lady had had originally an extra-uterine pregnancy. He placed her upon

the use of tonics, a nutritious diet, and, externally (?), an antiphlogistic treatment. She now became stronger, and the sore less irritable. In examining the latter, he found the probe to come in contact with what seemed like loose bones. The wound being enlarged about two inches in length, by dividing longitudinally the abdominal parietes, Dr. L. was enabled to remove at once some twenty fœtal bones, and others a few days afterwards. With the broad bones he had some trouble, from the small size of the opening; considerable hemorrhage attended their extraction. The former treatment was continued until the patient was well, and the wound had entirely healed. She is now enjoying excellent health, with the anticipation of living to quite an old age.

The *Transactions* conclude with the essay by Jean Baptiste Ullersperger, of Munich, in the Kingdom of Bavaria, to which was awarded the prize of the Society for 1867. Its title is, "La Transfusion et l'Infusion anciennes mises en parallèle avec la Transfusion, l'Infusion, et les Injections Hypodermatiques ou Sous-cutanées modernes." The original essay is followed by a translation in English, by Dr. C. H. Wittig, of Philadelphia.

The essay exhibits much learning and research. It furnishes a very full history of transfusion, infusion, and subcutaneous injection, and the use and value of these different procedures as therapeutic agents. The essay cannot be read but with interest, while it is not deficient in valuable practical instruction.

D. F. C.

ART. XXXI.—*A Treatise on Therapeutics, and Pharmacology or Materia Medica.* By GEORGE B. WOOD, M. D., President of the American Philosophical Society; President of the College of Physicians, of Philadelphia; Emeritus Professor of the Theory and Practice of Medicine in the University of Pennsylvania, &c. Two volumes, pp. 838, 990. Philadelphia: J. B. Lippincott & Co., 1868.

WHEN Dr. Wood's work on Therapeutics first appeared in 1856, we expressed our conviction that it fully sustained the high reputation of its author, and the same remark is applicable to the present edition. It embraces a full account of all the reliable discoveries in Therapeutics and improvements in Pharmacy, which have been since developed by the ever-increasing activity in those departments of medical science. The revision of the original text and the incorporation of so much new matter—a work of great labour and difficulty—have been completed with the conciseness, clearness, and precision characteristic of the author.

In the classification we note several interesting changes which "the progress of the science has rendered advisable." The Calabar Bean is introduced as Class IV. of General Sedatives, under the head *Spinal Sedatives*; and a full account of what is up to this time known concerning that singular and powerful drug, thus prefaced: "As there is but one agent which I could place strictly under the spinal stimulants!—*nux vomica*, namely, and other vegetable products characterized by the presence of strychnia—so there is but one which I can attach to the present class—the newly-discovered Bean of Calabar." Although thus placing it as a "direct sedative of the spinal centres," Dr. Wood observes that it has not yet been satisfactorily successful in the treatment of either tetanus or strychnia-poisoning; and adds, that it yet remains in a considerable degree undetermined how far its therapeutic usefulness may correspond with our impressions in relation to its properties.

Two new classes of non-systemic remedies have been formed in order properly to arrange several substances of peculiar powers; one embracing the *Disinfectants*, "which chemically destroy noxious and fetid exhalations; and *Parasiticides*, which are destructive to the lower forms of animal and vegetable exist-

¹ As heretofore, Dr. Wood places ergot among the local remedies, under the head "uterine motor stimulants."

ences, located in the human body, and acting injuriously upon it. These last named include the two subclasses of *Anthelmintics*, which favour the expulsion of worms from the bowels; and *Antizymotics*, which are destructive of those microscopic organisms which support fermentation, and thus probably cause and sustain the proper zymotic diseases."

The disinfectants are considered under the heads of agents operating mechanically: *Cleanliness, ventilation, charcoal, lime*—and agents operating chemically: 1. Oxidizing disinfectants, comprising *ozone, chlorine, bromine, iodine, permanganate of potassa, peroxide of hydrogen, and mineral acids with their metallic salts*; 2. Deoxidizing disinfectants, comprising *sulphurous acid and the sulphites, nitric oxide, sulphate of the protoxide of iron, and ammonia*; 3. Neutralizing disinfectants, including *carbolic acid* with analogous substances, *chloride of zinc and chloride of iron*.

The articles regarded by Dr. Wood as antizymotics are *sulphur, sulphurous acid, the sulphites and hyposulphites, carbolic and cresylic acid and creasote, tar with impure pyroligneous acid, smoke, petroleum, and saccharine solutions*. He has given a comprehensive statement of the prevailing views concerning fermentation, purulent infection, and septicæmia, presenting also the results of treatment adopted in accordance therewith. Though we are not prepared to accept as satisfactory all the observations recorded, we can indorse the opinion that "the trials of the sulphites internally administered, while not absolutely conclusive as to their power of modifying or preventing the so-called zymotic diseases (especially in view of contrary results said to have been obtained by others), are certainly very encouraging, and should stimulate to still further efforts in the same direction."

Of the numerous subjects considered at length with reference to opinions recently advanced by prominent members of the profession, we can notice but two; the supposed antagonism between belladonna and opium, and the character of the action of digitalis upon the heart.

"Much has been said of an antagonistic relation between opium and belladonna, in their effects on the system, which is supposed to render them, to a certain extent, mutually antidotal in cases of poisoning from either." * * * Dr. W. says: "I have examined many of the reported cases, and have come to the conclusion that we should not be justified by anything which has yet been published, in relying practically upon the entire adequacy of either of these narcotics for the prevention of the poisonous effects of the other, and especially upon that of belladonna to obviate the danger from excessive doses of opium." After a clear statement and careful analysis of the question, and of all facts reported in connection with it, Dr. Wood repeats the conclusion that "it would be very hazardous to trust a case of poisoning from belladonna or opium exclusively to the supposed antidotal powers of either. Still, both of these narcotics may be advantageously used with due attention to their special influences. Thus the excessive agitation of belladonna poisoning, and the prostration of its advanced stage may be relieved by the composing and stimulant influence of opium; while the stupor and depression which mark the later stage of the effects of opium, may be counteracted by the supporting and agitating action of belladonna; but care should be taken that the two do not coincide in their poisonous effects; that is, that neither the early nor the advanced stages of their action should come together. The observations of Drs. Mitchell, Keen, and Morehouse, and of Dr. Da Costa, upon the action of atropia and morphia, are presented in a note at the end of the article on belladonna."

The views expressed by Dr. Wood in regard to the effects of digitalis upon the system seem to be so correct, and have such immediate and important connection with its proper therapeutic application, that we quote them at length. "The opinion has recently been put forth by Dr. Fuller, of London, and has received the support of several writers, that digitalis, so far from being sedative to the heart, is in fact tonic in its influence on the cardiac muscular fibres. This opinion is founded mainly on the fact that digitalis proves most useful in those cases of disease of the heart in which that organ is dilated and enfeebled; and that instead of further weakening the heart it gives greater energy to its actions. But I believe that this view is incorrect, and that its advocates have

been led into error by confounding depression of action with diminution of power. Those who maintain the sedative action of digitalis upon the heart, do not maintain that it has the power of directly diminishing the power of that organ. On the contrary, it may even increase the strength of a diseased heart indirectly by diminishing its action. In reducing the frequency of the heart's action it operates through the nervous centres and not directly on the heart itself. It is, therefore, depressing or sedative to the cardiac actions without immediately affecting the organ. The effect of morbidly increased action on a heart already weak is to increase its weakness by exhaustion. Whatever, therefore, depresses this excessive action without immediately acting on the heart, prevents its further exhaustion under the over-exertion, and gives it an opportunity to recover its powers partially through comparative rest. Thus digitalis may indirectly strengthen the heart, while acting as a sedative to its function. The idea that it is really tonic to the heart is a very dangerous one, as it may lead to its use under circumstances when it can do only harm; that is, in which the heart may be greatly debilitated and yet not over-excited; where not only the heart is weak, but the pulse is slow and also weak. According to Dr. Fuller and the advocates of his hypothesis digitalis proves fatal by a tonic contraction and spasm of the heart." But this directly conflicts with both the general symptoms of prostration, and the special conditions of the pulse, always noted before death, and the constriction of the heart and orifices reported in post-mortem examinations, has yet been observed in too small a number of instances to justify any conclusions from it. Neither does the idea of the tonic property of digitalis receive any real support from its asserted favourable influence in delirium tremens, and its supposed contractile influence over the uterus. In the former case, if useful at all, it must act by simply reducing action and not diminishing power; and the enormous doses of this drug sometimes administered become exceedingly dangerous by producing this effect in such degree that the heart ceases to be adequately supplied with blood in its own tissues, and becomes therefore completely prostrated. Dr. Wood entirely agrees with Dr. Fuller in believing that digitalis does not act by paralyzing the muscular fibre of the heart; but this does not require the admission of the hazardous idea that it is tonic to the organ. It operates simply, as before stated, by depressing the action of the nerve-centres which regulate the heart's action.

The stimulating influence of mercury upon the bile-forming function of the liver, Dr. Wood again states as, in his opinion, one of the most certain and best proved effects of that medicine. We note this with interest, since some authors have questioned the point. Apart from the testimony of Dr. Wood and other observers, we have long regarded the researches of Dr. Michea (published in *L'Union Médicale*, 1849) as entirely conclusive. These investigations were undertaken after the doubts expressed by MM. Trousseau and Pidoux, and demonstrated by chemical analysis that "calomel acts in a special and direct manner upon the liver, producing an excess of bile."

Besides the additional matter already alluded to under the new heads of classification, and sufficient notices of remedial substances of minor importance, we find in this edition articles of considerable length upon *cocoa*, *nitrous oxide*, *antimoniated hydrogen*, *gelseminum*, *bromine and its preparations*, and *lithia with its carbonate and citrate*. The use of liquids in the form of spray in pulmonary therapeutics, and the hypodermic method of medication, receive due attention.

At the close of the second volume an appendix is introduced containing lists of the alterations which have been made in the new (second) edition of the British Pharmacopœia, the references in the body of Dr. Wood's work having been prepared in accordance with the first edition of 1864. Any serious misapprehension is thus prevented by the opportunity furnished of comparison between the two.

No topic having a direct bearing upon the subject of this treatise, has been neglected in preparing the third edition; and we agree with the author that he "may justly say that, whatever may have been the merits of the former editions, as exhibiting the condition of *Materia Medica* at the periods, respectively, when they were issued, the present will not be found to have deteriorated as representative of the existing state of the science."

E. R.

ART. XXXII.—*Synopsis of the Course of Lectures on Materia Medica and Pharmacy, delivered in the University of Pennsylvania; with Five Lectures on the Modus Operandi of Medicines.* By JOSEPH CARSON, M. D. Fourth edition revised. 8vo. pp. 272. Philadelphia: Henry C. Lea, 1867.

PREVIOUS editions of this synopsis have been noticed with approbation in this Journal. To students at the University of Pennsylvania it must be eminently useful in facilitating the study of this essential and very difficult branch of medical education. The value of the present edition has been very much augmented by the addition to it of five admirable lectures on the *modus operandi* of Medicines. In these lectures we have a clear exposition of the learned author's views of the participation of the nervous system in the production of the phenomena which result from the action of medicines on the organism, as well as an explanation of the manner of their absorption. In this connection osmosis is fully discussed; nothing is omitted which the medical student needs to enable him to clearly understand the subject. Indeed, it may be said that the author has presented here, in a condensed form, all the knowledge which has been acquired by the most successful modern investigators, and indicated the relations of osmosis to the mode in which medicines operate. We take pleasure in commending the careful study of these lectures to those for whom they were especially prepared, as well as to the profession generally.

W. S. W. R.

ART. XXXIII.—*Studies in Pathology and Therapeutics.* By SAMUEL HENRY DICKSON, M. D., LL. D., Professor of Practice of Physic in Jefferson Medical College, Philadelphia. 12mo. pp. 201. New York: Wm. Wood & Co., 1867.

THIS little volume comprises six essays, which treat, respectively, of Disease, its character and tendency; the Causation of Disease; of certain Morbid Conditions of the Sensorial System; Pneumonia; Scrofulosis and Tuberculosis; Therapeutics. They are all eminently readable, and if they cannot be said to convey always positive and direct practical instruction, they are highly suggestive, and cannot fail by their attractive style to fix the attention of the reader, and lead his mind to the careful examination of important questions.

The first three of the essays cannot be read without profit. Even though some of the propositions of the author in reference to the character and etiology of disease, and the action of remedial agents resorted to for their control, may seem to be opposed to the facts derived from the careful study of certain of those epidemic and endemic maladies which have prevailed in modern times, they all, nevertheless, deserve a careful and candid examination, as highly plausible and ingenious.

A general idea of the author's views of the nature of disease may be learned from the following propositions which he defends in the initial essay of the volume under notice. "I believe," he remarks, "and have endeavoured to maintain—

"A. That disease—never a salutary process—is essentially evil, and always tends to evil.

"B. That spontaneous recoveries take place, not because the diseases cure themselves, but because they fail to kill.

"C. That there exists in the organism no special or separate power of restoration, under whatever name. Life itself is the *vis medicatrix*, and nutrition the mode of its action.

"D. That the elimination of poisons, or of diseased products from the system, is not effected by the diseases they excite and attend on.

"E. That such elimination, whenever it occurs, is effected by, and is proportioned to, the vigour of the remaining healthy functions, and not to the extent of diseased actions.

"F. That true therapeutics consists, in our present ignorance, chiefly in fostering the *residual* powers of natural action and function; and

"G. That our hopes point to antidotal means of arresting, correcting, and counteracting the causes."

D. F. C.

ART. XXXIV.—*The Medical Use of Electricity, with special reference to General Electrization as a Tonic in Neuralgia, Rheumatism, Dyspepsia, Chorea, Paralysis, and other Affections associated with General Debility. With illustrative Cases.* By GEO. M. BEARD, M. D., and A. D. ROCKWELL, M. D. 12mo., pp. 65. New York: William Wood & Co., 1867.

This little volume is neatly printed on tinted paper and prettily bound. Its contents "were originally published in the *Medical Record*, and the unexpected attention they received from the profession" induced the authors to collect and publish them in book-form. It looks very much as if it would serve them very well as a business card, and at the same time contribute something towards attracting professional attention to electricity as a therapeutic agent. These authors say that "the science of the medical use of electricity is just emerging from infancy into childhood," without adverting to the fact that electricity has been employed in the treatment of diseases more than a century, and that every modern treatise on *materia medica* and therapeutics devotes more or less space to its consideration as a remedial agent. As early as 1740, Pivati of Venice, and Veratti of Bologna, resorted to static electricity in the treatment of disease. A paper was read March 31, 1748, before the Royal Society of London, entitled "Novum reique Medicæ utile electricitates inventum exponit Joannes Henricus Winkler, Professor Lipsienis et Societatis Regalis Londinensis Sodalis." Winkler states that in the beginning of the year John Daniel Gaifel had written to him an account of the excitement at Venice, Bologna, and other cities of Italy, produced by the cure of disease by electricity, and that he himself knew a woman whose catamenia began to flow immediately on her being subjected to the electric current. December 18, 1778, M. Mauduyt read before the Royal Medical Society of Paris a detailed account of the treatment of eighty-two patients by electricity, about one-half of whom were cured, or much benefited. In 1802 Mr. John Birch, a surgeon of St. Thomas's Hospital, published the results of his twenty years' experience in the use of electricity, and reports cases of scirrhus testis cured by this agent. Mr. George Adams says, in his work on Electricity and its application to medicine, the third edition of which was published in 1787, "when used by the skilful it is as certain in its effects as any medicine in the whole *materia medica*, and more extensive in its applications." There is abundant evidence to show that the administration of electricity in various modes is not new, although the term "science of the medical use" of this agent may be original with the authors. Nor is "general electrization" a novelty. Substantially the same directions for the use of electricity are given by Dr. Jerome Kidder, a well-known manufacturer of electro-magnetic machines, in his "Exegesis," which accompanies the apparatus sold by him, as those of our authors, except only that they recommend the hand of the electrician to be employed as an electrode instead of a moist sponge.

That the administration of electricity is extensively popular at the present time is implied by the number of persons engaged exclusively in the manufacture of apparatus for the purpose, as well as by the number of so-called "medical electricians," whose showy sign-boards are displayed in most of our cities, and whose alluring advertisements are published in many daily newspapers.

Drs. Beard and Rockwell bear testimony to the efficacy of the treatment of several forms of disease by electricity, and express their opinion that its administration is not dangerous. In corroboration of this view they state that "Wm.

Miller, of this city, a man of no special medical education, but of the utmost reliability, and thoroughly experienced in the practical application of the Faradaic current, informs us that for the past thirty-five years he has allowed the stream to pass through his own body on an average about five hours each day. By mathematical computation, then, it appears that a powerful induced current of electricity has been passing through him for about seven years of his life. Up to the present time, his general health has been excellent, has indeed improved under the mighty stimulus, and he has suffered from no disease that can even be remotely ascribed to electricity. It is safe to say that no parallel instance can be found in either hemisphere."

Whether this testimony proves too much or too little is questionable. We are left to infer that an electrical current passed through the body of a man five hours daily, during a continuous period of thirty-five years, effected no modification either in the structure of his tissues, or in the functions of his organs. This instance, taken by itself alone, as here stated, implies that the electric current is incapable of exerting any permanent and essential change in the functional or organic condition of the human organism. Yet, we believe that such conclusion is fallacious, because there are so many competent witnesses who testify distinctly on the opposite side, and assert that the administration of electricity in disease is often wonderfully efficacious, sometimes unavailing, and in some instances positively injurious.

W. S. W. R.

ART. XXXV.—*Intestinal Obstruction*. By WILLIAM BRINTON, M. D., F. R. S. Edited by THOMAS BUZZARD, M. D., Lond. Small 8vo. pp. viii. 136. London: John Churchill & Sons, 1867.

THIS little book comes to us with the melancholy interest which always attends a posthumous publication. "The manuscript, finished even to the preface," says Dr. Buzzard, "was in the printer's hands, and some of the sheets had been corrected, when the untimely death of the author put a stop to his personal completion of a work in which he took particular interest."

Dr. Brinton had made intestinal obstructions his special study from a very early period of his professional career. While yet a student of medicine his attention was directed to the investigation of the process by which fecal vomiting was effected, and he soon became convinced of the incorrectness of the theory of "anti-peristalsis" then in vogue. In 1848 his conclusions were first publicly announced in a paper read before the Royal Society, and introduced by his teacher in physiology, the late Dr. Todd. In 1859, Dr. Brinton delivered the Croonian Lectures before the Royal College of Physicians, and these lectures which at the time were published in the *London Lancet*, and widely read, constitute in a revised form the subject-matter of the present volume.

Dr. Brinton has found from an analysis of about 12,000 promiscuous necropsies that, excluding all cases of hernia, other forms of intestinal obstruction are the cause of death in about one two-hundred-and-eightieth of the entire number. Among cases of obstructed bowel that prove fatal about 43 *per cent.* are intussusceptions or invaginations; 31½ *per cent.* obstructions by bands, etc., external to the bowel; 17½ *per cent.* strictures and tumours involving the intestinal wall, and 8 *per cent.* twistings of the bowel on its own axis.

Of cases of intussusception 56 *per cent.* are ileo-cæcal, 28 *per cent.* iliac, 4 *per cent.* jejunal, and 12 *per cent.* colic. Of cases of obstruction from bands, adhesions, peritoneal lesions, etc., 95 *per cent.* involve the small intestine, while of the third and fourth classes, strictures and torsions, 88 *per cent.* are of the large bowel.

The sexes are pretty equally affected by most of the forms of intestinal obstruction; impacted gall-stones are, however, met with four times as often among women as among men. These and other interesting statistical points will be found embraced in a table on page 88.

Most of our readers are, doubtless, familiar with the theory which Dr. Brinton

has so ably advanced, and which is now generally acknowledged to be correct. To such as are not conversant with our author's views we would earnestly recommend a careful study of the little volume before us, where will be found a complete and lucid exposition of the whole subject.

With regard to the oft-mooted question of operative treatment in cases of intestinal obstruction, we think Dr. Brinton's views are entirely correct and well founded. The whole matter must be decided by the accuracy with which the nature of the obstruction has been diagnosed. In cases of intussusception (nearly one-half of the whole number) no operation whatever is justifiable, for suitable medical treatment will be much more apt to promote recovery than the use of the knife. Cases of stricture or tumour, which are much slower in their progress, and in which the large bowel is nearly always the part involved, may sometimes call for the operation of lumbar colotomy as originally practised by Amussat. This operation is comparatively free from danger, and, where practicable, should be preferred to gastrotomy. The latter, which is of course an operation of the gravest character, is only justifiable in certain cases of obstruction by fibrous bands, peritoneal lesions, or twisting of the intestinal tube; and in these cases only when medical treatment proves unavailing, and the patient is evidently doomed to a rapid death unless relieved by an operation. We may here refer our readers in passing to the account of a successful operation performed by Mr. Bryant in a case of this kind (which was complicated by the existence of a reducible hernia), to be found in the number of this Journal for July, 1867, p. 263. A similar case was reported to the Philadelphia Pathological Society some time since by Dr. T. H. Andrews, in which herniotomy was performed, but no strangulation being found further search for the cause of obstruction was discontinued, and the patient shortly afterwards died unrelieved. The autopsy showed that the intestine was obstructed by a firm band of adhesion about four inches above the ilio-cæcal valve. [See *Am. Journ. Medical Sciences*, January, 1867, p. 149.]

With regard to the medical treatment it must be remembered that the most desperate cases sometimes end in spontaneous recovery, and hence the first object of the physician must be to *prolong the life* of his patient. In doing this "the following seem the chief indications of treatment: to prevent distension; to assuage pain; to mitigate excessive peristalsis; and to support the patient's strength during what is necessarily an exhausting and often a long illness."

To accomplish the first object, the *bulk* of food and drink taken must be diminished as much as possible. Very small quantities of cool or iced liquids, and of beef-tea, milk, or other concentrated food may be administered at frequent intervals. The second and third indications may be best met by the use of opium, "given alone, in the solid form, and preferably in the shape of the extract." In some specified cases, Dr. Brinton has found advantage from the use of a combination of opium and belladonna. Enemata, which are indispensable on account of their mechanical effect in gradually distending the bowel at the seat of obstruction, may also be made to assist in conveying nutriment into the system, and thus aid in accomplishing the fourth object mentioned. We quote the author's remarks upon the administration of purgatives, as being eminently judicious, and as affording a fair sample of the energy and clearness of his style.

"'Withhold purgatives,' I should say, were I addressing a class of students to whom I might justifiably speak *ex cathedra*—'withhold purgatives in these cases, not because the cases themselves are hopeless, for there is nothing to justify the inaction of despair. Some of these cases recover, and many may be treated successfully. But withhold purgatives because they are not merely useless, but positively hurtful; hurtful not only in the late, but in the early stage of the obstructive process; not merely condemned by an experience which is sometimes equivocal, but contra-indicated by whatever rational principles can be deduced from the physiology and pathology of the malady. Or give them, if you give them at all, with a full warning that you are adopting a routine which, a few years hence, you will probably have to renounce and oppose; and which, in the mean time, your patients and yourselves will find an agonizing and deadly

substitute for clearness of insight, accuracy of diagnosis, and resolution of treatment.'"

We also quote the "summary of treatment," which concludes the work.

"In intussusception of the large intestine, repeated injections of liquid into the rectum, so as to distend the bowel to its utmost dimensions.

"In stricture of the large intestine, the institution of an artificial anus above the obstacle.

"In obstruction from bands, diverticula, etc., mostly affecting the small intestine, gastrotomy, and division of the cord-like cause of strangulation; a procedure which, if interrupted by unforeseen impediments, may further require the institution of an artificial anus in the most distended part.

"In obstruction by stricture, however, a tobacco enema should be administered at least once; a measure which should be repeated, if need be, in obstruction by bands, and especially by gall-stones.

"In all cases opium and support to be freely administered from the earliest stage of the malady. The bulkier liquid constituent of the food to be given as sparingly as possible by the mouth, but administered freely per anum. Distensive enemata to precede all operations, if only as a means of aiding or assuring diagnosis. Where vomiting is excessive, nourishment to be also injected into the rectum in small and frequent doses.

"After recovery, all food which can introduce indigestible substances into the intestine should be carefully avoided; the bowel having sometimes undergone changes of calibre and arrangement such as permit substances easily transmissible through the healthy canal to cause fatal obstruction."

Dr. Buzzard's part, as editor, is well done. He has presented Dr. Brinton's work to the profession, in the way in which the profession is most pleased to receive it, just as it issued from the lamented author's hands. He has added in his editorial note the details of three cases of intestinal obstruction which recovered under the treatment laid down by Dr. Brinton.

The book is very neatly printed, and is illustrated with seventeen well-executed wood-cuts.

J. A., JR.

ART. XXXVI.—*Sore-Throat, its Nature, Varieties, and Treatment; including the Use of the Laryngoscope as an Aid to Diagnosis.* By M. PROSSER JAMES, M.D., etc. etc. Second Edition, Illustrated. 12mo. pp. 155. London, 1866.

In his preface to the first edition, Dr. James states, that in the preparation of the work before us it was not his intention "to compile a systematic account of the diseases of the throat;" a disclaimer altogether superfluous, since no one could pretend to include in one hundred and twenty-five pages, a complete account of the symptoms, etiology, pathological character, diagnosis, and treatment of simple inflammation, follicular, ulcerative, and aphthous inflammation of the throat, croup, diphtheria, pharyngitis, the various affections of the uvula and soft palate, inflammation and hypertrophy of the tonsils, mumps, bronchocele, laryngitis, venereal and cancerous sore-throat, nervous sore-throat, etc.; the whole prefaced by a preliminary sketch presenting a general view of the pathology and therapeutics of the mucous membrane and glands of the mouth and fauces—including the pharynx and larynx. We have no particular fault to find with the author's views, generally speaking, but only with the mere outline-like superficial character of his teachings throughout; by which the treatise is rendered of no value to the practitioner for reference, and but an imperfect guide to lead the student to a knowledge of some of the most important maladies for which he will be called upon almost daily to minister.

The short account of the use of the laryngoscope as an aid to diagnosis in the affections of the throat, which appears for the first time in the edition before us, the instrument not having been introduced into England when the first edition made its appearance.

"Foreseeing," says Dr. James, "the attempt to unduly elevate instrumental diagnosis, an effort has been made to specify the cases in which the use of the laryngoscope will alone be serviceable."

It is to this part of the work the illustrations referred to on the title page appertain.

D. F. C.

ART. XXXVII.—*On Diseases of the Lungs and Air-Passages; their Pathology, Physical Diagnosis, Symptoms, and Treatment.* By HENRY WILLIAM FULLER, M.D., Physician to St. George's Hospital, London. 8vo. pp. 469. Philadelphia: Henry C. Lea, 1867.

THIS reprint of Dr. Fuller's work is from the second and revised London edition. The first edition, the author tells us, was exhausted in less than two years after its publication.

Dr. Fuller alludes in his preface to the dread with which the study of diseases of the chest is generally regarded by the student; part of this feeling is no doubt attributable to the wide field which the subject covers, part to the practical difficulties which beset him in his attempts to master physical diagnosis, and part to the confused and conflicting statements which are to be found in most of the text-books on this subject. It is, therefore, with pleasure that we see this book issued in a form within reach of every one, for, as the author says, it has evidently been his object "to use the simplest language, so as to obviate the formidable difficulty presented by the confused and varied phraseology made use of by many writers on the subject, to give a definite meaning to each term which is employed, and to present a classification of the various words which shall be intelligible even to a novice at auscultation."

We think the author has attained his object. His style is clear and concise; the meanings of the different terms employed by him are distinctly given, and the classification of percussion and auscultatory sounds, whether morbid or healthy, is simple, and, at the same time, comprehensive.

The work is divided into two parts; the first of which is taken up with the consideration of the various methods of physical diagnosis, and in the second the various diseases of the respiratory organs are discussed in detail. In the first chapter the topography of the chest and the various regions into which it has been found advisable to map out the surface of the chest are described; the boundaries of these regions are to a certain extent natural ones, and do not differ from those to be found in the usual text-books. The short time which is spent in becoming familiar with these regions, and their contents, will be found to have been profitably employed. Inspection is the subject of the next chapter. Then comes the consideration of palpation, then mensuration, then percussion, then auscultation, and lastly succussion. The order here observed is the one which will be found the most convenient to follow in the examination of patients. The rules for the application of all these methods to the purposes of diagnosis are very well given. The signs furnished by them in health are first considered, and then later those which a diseased condition of the respiratory organs will give us. In speaking of the characters of percussion sounds, Dr. Fuller attaches very little importance to differences in pitch, but lays more stress upon changes in the quality, duration, clearness, and fulness of tone. In this he differs from Dr. Flint, of New York, by whom much value, in a diagnostic point of view, is attributed to alteration in the pitch of sounds. It has certainly seemed to us that a slight tubercular infiltration of the lung is sometimes readily recognized by a change in pitch, when there is no perceptible alteration in any other character of the sound. Dr. Fuller objects to the use of the terms amphoric resonance and cracked-pot sound, and proposes to group them with the terms tubular, tracheal, bronchial, and cavernous, under the head of "clear, but shallow toned." But the two first sounds differ materially in quality from the other two, and from each other; and their nature is tolerably indicated by the names used to designate them. It is, therefore, better to retain

these terms; the other four come very well under the head "clear, but shallow toned."

The chapters on auscultation, like those on percussion, are exceedingly practical. The mechanism of the healthy and morbid sounds is satisfactorily explained, if the crepitant râle be excepted. This is called by Dr. Fuller a bubbling râle, and attributed by him to the bursting of minute bubbles in the capillary tubes. If this be accepted as the correct explanation it is difficult to understand the occurrence of the râle solely in inspiration, as the return current of air in expiration would give rise to the same sound. The explanation of the late Dr. Carr, of Canandaigua (*Amer. Journ. of Med. Sciences*, October, 1842), is the one generally adopted in America. By him it was attributed, as is well known, to the separation of the sides of the air vesicles in the inflamed lung under the influence of inspiration. This is a mechanism which may be readily imitated, as Dr. Carr has shown, by moistening the ends of the finger and thumb with a solution of gum Arabic, and then alternately pressing together and separating them while they are held near the ear. During expiration there is nothing analogous to the rapid unfolding of the cells, and hence the absence of the sound. The chapter on the resonance of the voice is a very good one, especial care being taken to explain the reason of the increase in intensity and alteration of pitch which is sometimes observed over a solidified lung; these two changes are chiefly referred to the non-diffusion of sound and to the principles of unison, resonance, and echo.

Ægophony is attributed by the author to the "impulse of the vibrating and partly solidified lung against the costal pleura, an effect—viz., the repeated impulse of one solid vibrating body upon another—exactly analogous to that which takes place in the school-boy's trick of speaking upon thin paper over the teeth of a comb, or in that of speaking as Punch and Judy's showmen do, with a thin dish of metal or ivory so placed in the mouth as to lie between the lips and the teeth, and to obstruct the egress of the air from the mouth, in which case an ægophonic character is imparted to every sound by the jarring vibrations excited by the repeated impulses of the disk against the teeth."

The principal diseases of the respiratory organs are fully considered, while those of minor importance receive due attention in Part II. The treatment recommended in the acute diseases is moderately depletory, venesection being neither entirely condemned nor indiscriminately authorized, due regard always being had to the character of the case. The treatment of acute inflammation of a sthenic type, by means of large doses of alcohol, is rightly regarded, we think, as little better than that by excessive depletion.

One of the best chapters in the book is that on pulmonary consumption. The rational symptoms and physical signs by which the disease is made known to us; the anatomical changes to which the tubercle give rise; the various forms under which the disease may show itself, are all duly discussed. Dr. Fuller is a supporter of the theory of the curability of consumption, and is therefore a warm advocate of cod-liver oil, which he believes prevents, to some extent, the further deposition of tubercle by improving the general character of the blood. He does not think the occurrence of hemorrhage a contraindication to its use, as he believes the congestions which give rise to the hemorrhages are best prevented by improving the quality of the circulating fluid. He insists, therefore, upon its early use by all who show any predisposition to this disease. The remarks made on the subject of climate are exceedingly practical. There is, perhaps, no question which will perplex the physician more than that in regard to the advantage to be derived from travelling. No general rule can be laid down, each individual case having to be decided according to its own merit, for there is no doubt that while to some patients the pleasurable excitement derived from change of scene and from sight-seeing, will retard or even arrest the further development of tubercle; the loss of home comforts and of the society of friends will, in other cases, rather precipitate the fatal issue. Every patient, Dr. Fuller says, is not benefited by the same climate. It is a matter of common remark that some people are invigorated by cold weather, while others enjoy the highest degree of health in summer. It is unnecessary to say that the susceptibility to either heat or cold is very much increased in sickness.

In a careful reading of the book we have found very little to criticize, and much to commend, we therefore recommend it to both physicians and students who are anxious to become familiar with diseases of the respiratory organs and with the physical signs by which they are revealed. The author, having few theories of his own to uphold, has given those of others a candid and unbiassed consideration. The tables which are to be found distributed throughout the book will facilitate the student very much in his attempts to become familiar with the various physical signs and the diseases which they accompany. The American edition is well printed, and is free from typographical errors. We make this remark because we thought we had detected one; but on comparison with the London edition, the error, if it be such, was also found there. Thus, on page 99, the author speaks of changes of quality occurring first, and being most marked in inspiration, while in the table which immediately follows the same is said of the expiration. There can be no doubt, we think, that the word expiration should be substituted in the text for inspiration.

J. H. H.

ART. XXXVIII.—*Injuries of the Eye, Orbit, and Eyelids: their immediate and remote effects.* By GEORGE LAWSON, F. R. C. S. Eng., Assist. Surg. to the Royal London Ophthalmic Hospital, Moorfields, and to the Middlesex Hospital; late Ass. Surg. Rifle Brigade. With numerous illustrations. 8vo. pp. 430. London, 1867.

Reprint of the same. 8vo. pp. 408. Philadelphia: Henry C. Lea, 1867.

In this work the author treats of all the most important points relating to the injuries of the Eye, Orbit and Eyelids. He has not restricted himself, however, to the description of those injuries and their primary treatment, but he also points out the best methods of dealing with those changes and deformities which, however remote, may be more or less consequent on the accident. He is thus led to describe the various operations for cataract, artificial pupil, iridectomy, &c., and the scope of the work is consequently much more extensive than might be supposed from its title.

The author enters fully into the consideration of the following injuries: 1. Superficial injuries of the eye; 2. Injuries of the eye from burns and scalds, and chemical agents; 3. Penetrating wounds of the eye, and other injuries of the cornea and iris; 4. Traumatic cataract; 5. Capsular opacities and dislocation of the lens; 6. Foreign bodies within the eye; 7. Traumatic intra-ocular hemorrhage and rupture of the globe; 8. Gunshot injuries of the eye; 9. Sympathetic ophthalmia; 10. Injuries of the orbit; 11. Injuries of the eyelids.

These various forms of injury, with not only their immediate but also remote consequences, are well described, and most of them illustrated by characteristic cases. The best mode of dealing with these injuries is also pointed out.

Mr. L. has added at the end of his volume a set of test types intended to correspond with Jäger's, but with the addition of No. 15, as it appeared to him that the leap from the letters marked 14 to those numbered 16 was too great, and that an intermediate link was wanting. These test types will be found convenient, and will answer sufficiently well for testing the degree of vision in those cases in which it is impaired by the accidents treated of in the volume before us. But there are various anomalies of vision resulting from defects of refraction, as in astigmatism, &c., of which these types would not enable us to detect the existence, or to determine their degree, and for such purpose the test types of Dr. Snellen,¹ will be found useful. These are the most complete we have met with, and a copy of them should be on the table of every ophthalmic surgeon.

This work bears abundant evidence that its author is a surgeon of large experience and mature judgment, and we can recommend it as a useful and trustworthy guide in the treatment of the injuries of the eye, orbit, and eyelids, and their sequelæ.

¹ See No. of this Journal for July, 1866, p. 224.

If we were disposed to criticize, we might express the wish that the author had been more sparing in his recommendation of iridectomy, which it appears to us he advises on too many occasions. He seems to have joined the crusade, now so vigorously prosecuted by some leading ophthalmic surgeons in Germany and England, against that very useful and delicate organ, the iris, which those surgeons appear to imagine was created solely for the purpose of being excised by them. Among the selections made by Mr. L. for his test types is the fable of the fox which had lost its tail. The moral of this fable might perhaps be extended, and a useful practical lesson learned from it by iridectomists.

ART. XXXIX.—*Lectures on the Diseases of Women.* By CHARLES WEST, M.D., etc. etc. Third American from the Third and Revised English Edition. 8vo. pp. 543. Philadelphia: Henry C. Lea.

THE Lectures of Dr. West are so widely known and highly appreciated by the members of the profession in this country and in Europe, that it will be unnecessary for us to enter at this time upon any extended notice of the work. We would merely remark that the teachings of the author are based evidently upon very extended observations, and an intimate acquaintance with the writings of the most distinguished authorities of Europe upon the subjects of which he treats. So that, in respect to these, the work may be received by the medical student and inexperienced practitioner as a sufficient and faithful guide.

The present edition exhibits a general revision, and many important additions; the chief of these will be found under the heads of Uterine Hæmatocele and Ovarian Disease.

In reference to ovariectomy, Dr. W. admits that the operation is viewed with much greater favour than was the case seven years ago; "that the persevering efforts of its advocates have led to a greater accuracy of diagnosis; to a more careful selection of cases; to a removal of some of the dangers of the operation; to the discovery of the comparative safety of some proceedings, such as the return of the pedicle with the ligature around it into the abdomen, from which surgeons would have shrunk as nothing less than fatal, and to a more judicious after-treatment; and, consequently that ovariectomy has increased in certainty, and gained in safety."

D. F. C.

ART. XL.—*The Practice of Medicine and Surgery applied to the Diseases and Accidents Incident to Women.* By WM. H. BYFORD, A. M., M. D., Prof. Obstetrics and Diseases of Women and Children in Chicago Medical College, etc. 8vo. pp. 616. Philadelphia: Lindsay & Blakiston, 1867.

THIS is a second and enlarged edition of a treatise which has been before the medical public for two years, during which time it has received the commendation of the medical press, and the approbation of the profession generally, as an exponent of sound pathological views in respect to the diseases and accidents of which it treats, and of those therapeutical and surgical means best adapted to their treatment.

In the edition before us the work throughout presents evidences of a careful revision, while there has been made to it a large addition of new matter, illustrative of the true character, etiology, and treatment of the diseases and accidents incident to women.

The pathological views of Dr. Byford seem to be, in general, legitimate deductions from accurate observations, and his therapeutical directions to be borne out by the experience of judicious and experienced practitioners. The work may be put in the hands of the medical student as a safe guide to learn the nature and diagnosis of the morbid affections of which woman is liable, and the means best adapted for their removal.

D. F. C.

ART. XII.—*On the Action of Medicines in the System.* By FREDERICK WILLIAM HEADLAND, M. D., B. A., F. L. S., F. R. C. P., &c. &c. Fifth American, from the fourth London edition. Revised and enlarged. 8vo. pp. 431. Philadelphia: Lindsay & Blakiston, 1867.

THE fact that this work has passed through five editions in this country, and four in England, is sufficient evidence that it supplies a want felt to exist by the profession.

The volume consists of four chapters. The first contains some general introductory remarks; in the second some of the more important classifications of medicines, and opinions of authors respecting their actions are treated of; the third is devoted to the consideration of the general modes of action of therapeutic agents introduced into the stomach; and in the fourth the action of some of the more important medicines in particular are discussed.

The subjects treated of in this volume, it will be perceived, are highly important, and it is fair to say that the author has discussed them with fairness and ability.

ART. XLII.—*Headaches: their Causes and their Cure.* By HENRY G. WRIGHT, M. D., M. R. C. S. L., L. S. A., etc. etc. From the Fourth London Edition. 12mo. pp. 154. Philadelphia: Lindsay & Blakiston, 1867.

HEADACHE is not a disease; it is simply a symptom, and one which is present, to a certain degree, in the beginning or course of almost every disease, whether acute or chronic, to which man is liable. In certain cases of transient derangement of the digestive organs, headache constitutes a concomitant symptom, disappearing with it and returning whenever it recurs; while in chronic cases of dyspepsia, headache is an almost permanent symptom, aggravated at intervals by a variety of accidental causes, which act primarily upon the stomach and alimentary canal generally, upon the nervous system, or upon the heart.

In reference to headaches—we say, purposely, with Dr. Wright, headaches, for that most troublesome complaint, headache, differs materially in different cases in its character, its intensity, the period of the day at which it is most liable to occur or to exhibit its greatest violence, and the length of its paroxysms; how far it may be profitable to study them independently of the several morbid conditions with which in each case the headache is ordinarily associated, is a question we do not feel inclined on the present occasion to discuss; we will merely remark that in the work before us the author has presented in a brief manner a very interesting, and, in general, correct account of the symptom, its leading characteristics, and the usual morbid conditions with which it is found associated. He briefly considers—1st. The headaches; and 2d. The headaches of adult life. These he divides accordingly as they are—A. Dependent on the circulating system; *a*, the plethoric, which may be *occasional* or *persistent*, and *b*, the congestive. B. Dependent on the digestive organs; *a*, headache of indigestion; *b*, sick headache; *c*, bilious headache. C. Dependent on the nervous system; *a*, ordinary nervous headache; *b*, hysterical headache; *c*, headache of extreme exhaustion and debility; *d*, Megrims; *e*, Brow ague. D. Rheumatic and Gouty headaches. E. Headaches from organic disease. G. Headaches in old age.

In a formal review of Dr. Wright's treatise we should feel it our duty to contest the accuracy of the author's views as to the pathology of headache in certain of the cases in which it forms a prominent symptom. Nevertheless, the work will prove an instructive one to the student and junior practitioner.

D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Coagulation of the Blood, and Correction of the Ammonia Theory.*—At the late meeting of the British Association for the Advancement of Science, Dr. Richardson presented an interesting paper on this subject, in which he publicly withdrew his well-known theory of coagulation of the blood. Defending the experiments on which that theory was based, and urging that, at the time it was advanced, it rested on a reasonable induction, he added that further research had shown him there were such strong physical objections to it as a theory, that it was no longer tenable. He first called attention to the leading experimental facts on which the theory was based, and after explaining how consistently every experiment pointed to the inference that coagulation is due to the escape of a volatile substance from blood, he paused to explain the reasons which had led him to conclude that the evidence in support of that view was no longer reliable. From this point Dr. Richardson proceeded to illustrate his present views on the subject of coagulation, with special relation to the cause of the phenomenon. Some recent experiments which he had made on the influence of extremes of heat and cold on albuminous and fibrinous fluids, have shown to him that the process of coagulation in these fluids is due to a communication of caloric force to them, and to a physical or molecular change, determined by the condition of their constituent water. Thus all substances which possess the power of holding blood in the fluid condition, such as fixed alkalies, various soluble salts, and volatile alkali, in every respect act after the manner of cold. They render latent so much heat, and in the absence of that heat the fibrin remains fluid. In the opposite sense every substance which combines with water, and produces condensation, with liberation of heat, quickens coagulation. The direct effects of heat and cold illustrate the same truth, and upon these facts turn the differences of coagulation in animals of different temperatures. The author continued to state that in the ordinary condition there is a constant process similar to coagulation progressing in the living body in the formation or construction of muscle, and a steady and persistent interchange of force from those parts which are solidified by cold and fluidified by heat, to those which are rendered solid by heat. He concluded by showing that the process of *rigor mortis* was an illustration of the same order of phenomena.

Few men have contributed more, of late years, to the advancement of physiology by indefatigable labour, and ingeniously devised experiments than has Dr. Richardson; but nothing that he has done reflects more credit on him than the moral courage he has displayed in thus renouncing a favourite theory, so soon as he discovered that it was no longer tenable.

2. *On the Digestion of Proteids by the Pancreas.*—Dr. WM. KÜHNE has investigated this subject experimentally, and has been led by his experiments to the following important conclusions:—

1. Alkaline pancreatic infusion (the pancreas being removed from an animal during digestion) will not only digest proteids but will digest them at a rate and to an extent compared with which gastric digestion seems a slow and feeble process. It takes the collected ferment of the whole stomach days to digest half the amount of fibrin which the pancreas will digest in as many hours.

2. The pepton produced by the action of the pancreas, the pancreas pepton, differs in no essential respects from gastric pepton. Its neutral solution (and it is exceedingly soluble in water) is highly diffusible, is not coagulated by heat, and gives the ordinary proteid reactions. It differs chiefly from gastric pepton in the precipitate with acetate of lead not being redissolved in an excess of the reagent, as is the case with the latter; but even this mark appears uncertain. It certainly agrees exactly neither with the *a*, *b*, nor *c* pepton of Meissner; but pepton prepared by Kühne from fibrin by means of pig's stomach exhibited the same want of agreement.

3. Perhaps the most striking fact in the experiment is the enormous production of tyrosin and leucin.¹ Kühne even goes so far as to recommend pancreatic digestion as the most convenient method of preparing tyrosin. We seem to see here the reason why tyrosin and leucin are so often found in the pancreas and sometimes in pancreatic juice; they arise from self-digestion. Thus a pancreas of a dog weighing 47 grms., minced and boiled immediately after removal from the body, gave a decoction containing a trace of pepton, not even an indication of tyrosin and only minute quantities of leucin. Another pancreas of 53 grms. minced, and left to itself for 3 hours in 1 litre of water gave abundance of pepton, much tyrosin, and still more leucin. That, however, in the experiment of fibrin digestion neither leucin nor tyrosin came from the pancreas alone is shown by the fact that the tyrosin obtained weighed nearly as much, and the leucin more than twice as much as the dry weight of the pancreas used.

According to these experiments, therefore, digestion (at least pancreatic digestion) is not a mere conversion of proteids into diffusible modifications, but a process of actual destructive decomposition. We learn from Thiry's analysis that pepton has about the same elementary composition as undigested proteid; and hence it is extremely unlikely that the change taking place in digestion consists in the splitting up of fibrin, for example, into pepton on the one hand, and into leucin, tyrosin, &c., on the other. A much more probable idea is the one that pepton is a stage of decomposition; that the whole of the proteid undergoing digestion is changed first of all into pepton, which is afterwards split up into various non-proteid bodies.

These experiments of Kühne place digestion in a somewhat different light from the one which is at this moment predominant, and are exceedingly suggestive in many ways. The loss of nutritive material through the generation of what are generally regarded as products of regressive metamorphosis indicates the possibility of a *luxus* consumption of nitrogenous food, very different from the *luxus* consumption of Bidder and Schmidt. At the same time if, as is possible, the greater part of the pepton escapes into the blood by diffusion almost as soon as it is formed, and before it has had time to undergo any further changes, giving rise to leucin, &c., it is evident that natural digestion in the live alimentary canal must, after all, lead to results very different from those which follow upon artificial digestion taking place in the glass vessels of the laboratory. —*Journ. Anat. and Phys.*, Nov. 1867, from *Virchow's Archiv.*, xxxix. 130.

3. *Digestion of Albumen by Pancreatic Juice.*—The researches of Herr KÜHNE, recently reported to the Berlin Academy, prove that the secretion of the pancreas has the power of digesting albuminous substances. Herr Kühne produced artificial fistula in twelve dogs, and found that the viscid pancreatic juice extracted by the fistula dissolved large quantities of boiled white of egg

¹ This seems to have been previously observed by Skrebitzki. See Fudakowski, *Med. Centralblatt*, 1867, p. 547.

in from one and a half to three hours, and at a temperature of about 40° Centigrade. The albumen was converted into peptone, which is not coagulable, and which has the power of ready diffusion through animal membrane. This transformation takes place, according to Kühne, without the intervention of low organisms, and without the production of odour. His experiments on the digestive action of pancreatic juice artificially prepared led Kühne to much the same results. The solution was prepared by macerating the gland in water, and filtering. The artificial juice converts fibrin first into a soluble body, which eventually becomes peptone; this, in its turn, gives rise to leucine, tyrosine, and an extractive matter. If the pancreatic fermentation be continued, basic bodies and fatty acids make their appearance. That these processes take place also in the living animal is proved, says Herr Kühne, by the odour of naphthylamine from the excreta, and by the production of volatile fatty acids in the large intestine.—*Med. Times and Gaz.*, Nov. 2, 1867.

4. *Nutrition*.—Dr. LIONEL BEALE believes that the serum of the blood is the nutritive pabulum of the body; that the red corpuscles are concerned in its distribution and in preventing changes in the composition of the great mass of the blood as certain constituents are removed from or poured into it; that the white corpuscles are masses of germinal matter concerned in the formation of the serum as well as of the red corpuscles; and that the special products of nutrition depend not so much on the characters of the pabulum as upon the *converting* powers of the germinal matter throughout the textures and which *appropriates* from the pabulum the materials it requires. The red corpuscles have therefore assigned to them a secondary position as agents of nutrition. The principal argument in support of this is derived from the fact that elaborate tissues are formed in animals which have no coloured blood corpuscles. According to Beale three distinct phenomena are involved in nutrition. 1. The contact of the soluble pabulum with the germinal matter of the tissues. 2. The separation of the elements of the pabulum from their state of combination. 3. The rearrangement of these elements and the conversion of some of them into new germinal matter.—*Journ. Anat. and Phys.*, Nov. 1867, from *Quarterly Jl. of Microscop. Sc.*, July, 1867.

5. *Respiratory Functions*.—PETTENKOFFER and VOIT (*Annalen der Chemie und Pharmacie*, xli. Heft 3) have undertaken a series of researches in their large respiration apparatus at Munich, with a view to determining to what extent the respiratory functions vary during the day and during the night. Their first experiments were conducted upon a young watchmaker, aged 28 years, and led to a remarkable result, in respect to the difference in the amount of oxygen absorbed and carbonic acid evolved during the day and night periods. The experiments included one day of rest, during which the man amused himself by reading and repairing a small clock, and a day of labour in which he was made to turn a wheel heavily charged. The chief conclusions which may be drawn from these experiments are the following: 1st, That in 24 hours the volume of the CO₂ eliminated is about equal to that of the O absorbed; 2d, That the interchanges of gas effected by respiration go on differently by day and by night, so that the greater part of the O absorption takes place by night and the greater part of the CO₂ elimination by day. Work has scarcely any immediate influence on the oxygen absorbed during the day, although it has a great immediate influence in the amount of CO₂ eliminated. This seems to be formed at the expense of oxygen which has been stored up. 3d. The excretion of urea is not increased by work, although this be long sustained. 4th. The elimination of water is very much increased by work, and the increase continues during the ensuing hours of sleep. Pettenkoffer and Voit have, we believe, since repeated these experiments on the man who was the subject of the above experiments, but without confirming the results as to the difference between the day and night periods.—*Journ. Anat. and Phys.*, Nov. 1857, from *Centralblatt*, No. 31.

6. *Influence of Heat on Muscular Contraction*.—A valuable paper has been laid before the French Academy by M. CHMOUTEVITCH, in which the author shows that heat has a greater effect on the determination of muscular contrac-

tion than is generally supposed. M. Chmoutevitch conducted his experiments on the gastrocnemius of the frog, and has arrived at these conclusions. 1. The mechanical power of the muscle increases up to thirty degree or thirty-three degrees (Centigrade), according to its length and tension. 2. If the temperature be raised above thirty degrees, the power of the muscle diminishes, until, as the temperature becomes higher, a point is arrived at which may be called the zero of work. 3. In experimenting with two muscles which, in all but temperature, are under like conditions, it is found that the one submitted to the higher temperature loses its power of contraction more rapidly than the other. 4. The total work of a muscle (represented by the weight it can sustain) is always greater at a low than at a high temperature. 5. The explanation of the increase of mechanical work during the elevation of temperature is found in this fact, that the elasticity of the muscle increases with the temperature.—*Brit. Med. Journ.*, Oct. 26, 1867.

7. *Gases of Muscular Tissues.*—Dr. L. HERMANN has published a very interesting and suggestive work (*Untersuchungen über den Stoffwechsel der Muskeln*, U. S. Berlin, 1867, p. 128) on the character of the gases of the muscular tissue, and on the interchanges which go on between muscles, separated from the body, and the different gases, in the several conditions of rest, action, and rigor mortis. Amongst the most remarkable of his results are that the gases of muscle are quite free from oxygen, that the respiratory function of muscles which was supposed to exist by George Liebig, Matteucci, and others, is rendered more than doubtful, but that nevertheless when a muscle is thrown into action, or into a state of rigor, there is evolution of carbonic anhydride, which appears to be derived from a carbonic-anhydride generating substance.—*Journ. Anat. and Phys.*, Nov. 1867.

8. *Use of Perchloride of Palladium in Microscopic Investigations.*—Dr. SCHULZE, of Rostock, made a communication on this subject to the section for Anatomy and Physiology of the Association of German Naturalists and Physicians which met in Frankfurt in September last. He used a solution of 1 in 800, feebly acidulated with hydrochloric acid. Small pieces of tissue became, by the addition of this substance, as consistent as cheese, within eight days, and minute sections might then be easily made. The sections should then be deprived of water, and might be impregnated with carmine, whereby those parts which were not coloured by perchloride of palladium obtained a red appearance. By the use of the solution of palladium, the connective and elastic tissue remained uncoloured, hyaline membranes assumed a light yellow hue, cell-formations a darker yellow, and the nerve-marrow a grayish black. The fact that the unstriped muscular fibres (contractile fibre-cells) were coloured yellow by the perchloride, was of great importance, because they might thereby be easily distinguished from the connective tissue. Dr. Schulze had used this agent in his researches on the structure of the ciliary muscle, and found that the circular fibres formed a coherent layer on the whole inner surface of the ciliary body, while the longitudinal fibres formed a similar layer on the outer surface of this body. The anterior point of insertion of the muscle was fixed, the posterior being movable, so that, if a muscular contraction took place, the zonula Zinnii, which, in the elastic tense condition, was inserted on the capsule of the lens, would be deprived of its tension, and a more considerable curve of the lens be brought about.—*Med. Times and Gazette*, Nov. 16, 1867.

MATERIA MEDICA, GENERAL THERAPEUTICS AND PHARMACY.

9. *Bichloride of Methylene as a General Anæsthetic.*—We extract from an extremely interesting lecture by Dr. B. W. RICHARDSON, published in the *Medical Times and Gazette* (Nov. 2, 1867), the following particulars with regard to this new anæsthetic agent.

The following are its physical characteristics:—

“The bichloride of methylene is a colourless fluid, having an odour much like the odour of chloroform. It is pleasant to inhale as vapour, and it produces very little irritation of the fauces and air-passages. It boils at 88° Fahr. Its sp. gr. is 1.344. The sp. gr. of its vapour is 2.937; it is, therefore, nearly three times heavier than air.

“That we may have before us all these facts, and that we may be able to compare and contrast the properties of bichloride of methylene with those of other anæsthetics, I have written a table which will explain itself:—

	Bolling point, Fahr.	Sp. gr Water 1000.	Density of vapour, Air 1.
Chloride of methyl	6°	...	1.745
Bichloride of methylene	88	1.344	2.937
Terechloride of formyle—chloroform	142	1.495	4.122
Tetrachloride of carbon	172	1.599	5.321
Ether C_2H_5O	92	0.720	1.547
Amylene C_5H_{10}	96	0.659	2.419

“A glance at this table gives at once the physical positions, absolute and relative, of the bichloride. It boils at a lower point than any of the other anæsthetics—lower even than ether, and fifty-four degrees lower than chloroform. Its specific gravity, both as a liquid and a vapour, is lower than chloroform, but much higher than ether or amylene. From its position physically, it combines many of the properties of chloroform with those of ether, and these peculiarities must be remembered in its administration. From its easier evaporation, it requires more free administration than chloroform; and from its greater density of vapour, it requires less in quantity than ether.

“There is another physical difference between the bichloride and chloroform to which I would particularly invite your observation. If I take chloroform and diffuse the vapour of it through air in a bell jar thus, I find, when a taper alight is plunged into the jar, that the light is extinguished—in other words, the combustion is stopped. On further inquiry, I also find that the chloroform itself, though it has stopped the combustion, has itself undergone no obvious chemical change. We say, therefore, that the chloroform has acted by a catalytic process: it has stopped oxidation by its mere presence, without undergoing decomposition. I take next the bichloride of methylene, diffuse that in vapour through the jar, and plunge in the lighted taper. And now see the difference: the vapour burns in a brilliant flame, filling the jar. Here I have decomposed the substance; the carbon has been turned, by union with oxygen, into carbonic acid, and the hydrogen and the chlorine have been turned, by their new union, into hydrochloric acid. The proof of this latter fact concludes a singularly pretty experiment; I pour a few drops of strong ammonia into the jar in which the bichloride of methylene has been burned, and I produce a dense cloud of chloride of ammonium in white vapour, which pours out of the jar like water. I have been careful in showing these experiments with chloroform and bichloride of methylene, and the different behaviours of the latter in the presence of flame, because the experiments bear on one of the most able and ingenious theories ever put forward to explain the action of anæsthetics on living organisms. Some of you will know that I refer to the theory of Dr. SNOW. SNOW, observing that the vapour of chloroform extinguished flame, as we have just seen, reasoned that, as it thus stopped the combustion of a taper, so by its catalytic action it stopped the combustion of blood, from which arrest all the after phenomena of anæsthesia took their origin. ‘I could demonstrate all the phenomena of anæsthesia on a farthing candle,’ was one of his striking epigrams. But here we have a true anæsthetic, which will burn readily, giving brisk combustion. This fact, in so far as it goes, is not in accordance with the theory of my late distinguished friend, and in pointing out the fact I do no more in correction than I should for a favoured theory of my own, or than he would, were he here to speak for himself.

“The bichloride of methyl mixes readily and well with absolute ether, and as the two fluids have nearly the same boiling point—four degrees of temperature

being the extreme of difference—when they are combined they form a compound which vaporizes evenly and equally. The difference in the specific gravities of the two vapours is the only objection to the combination. The bichloride further combines with chloroform in all proportions.

“One more physical matter in respect to the bichloride of methylene, and this part of the subject may be concluded. The fluid should have at all times a neutral reaction to test-paper. If it show any acidity, there is present a trace of hydrochloric acid, and the vapour, which under such circumstances would also contain the acid, would be irritating to the throat, and perhaps dangerous to life.”

After learning by repeated experiments on inferior animals that it could be safely administered to them, Dr. R. inhaled it himself until it produced insensibility. “I found the vapour,” he says, “very pleasant to breathe, and little irritating, while drowsiness came on and unconsciousness without any noise in the head or oppression. I recovered also as the animals seemed to recover—at once and completely. I felt, in fact, as though I had merely shut my eyes and had opened them again. In the mean time, however, I had performed certain acts of a motor kind unconsciously; for I inhaled the vapour in the laboratory, and there went into sleep, but I awoke in the yard adjoining. This was on September 28th last. I inhaled on the occasion from a cup-shaped sponge. Since then, I have inhaled the vapour in smaller quantities from several instruments, with the effect of proving that there is little difference required for administration between the bichloride and chloroform.”

Like all other general anæsthetics, the bichloride of methylene has power to destroy life. Its safety must, therefore, be accepted as relative rather than absolute. Dr. R. has tried to ascertain its relative value, and the result, he says, leads him “to hope that the balance of safety is on the side of the bichloride. Three observations bring me to this reasoning. First, I find that if two animals of the same age and kind, say pigeons, be placed in chambers of the same size, and exposed at the same temperatures, and under other conditions the same, to equal values of chloroform, tetrachloride of carbon, and bichloride of methylene, the resistance to death will be as fourteen to five in favour of the bichloride of methylene against the tetrachloride of carbon, and as fourteen to nine against the chloroform.

“In the second place, when animals are exposed until they are killed by these vapours, there is a marked difference in the maintenance of muscular irritability. The tetrachloride of carbon destroys the muscular irritability first, the chloroform next, and the bichloride of methylene last, and this difference I have found so striking as to represent in one experiment a period of seven minutes for extinction of irritability by the tetrachloride, twenty-three minutes for the chloroform, and fifty-eight minutes for the bichloride of methylene. This distinction rests, I think, on differences in the amount of chlorine in the three substances, and I point out the fact not merely as showing the lower destructive power of the bichloride, but as affording a hope that in a case of accident from it the means resorted to for restoring animation would be more likely to succeed, the muscular power remaining more directly under the influence of excitants to renewed action, and for a long interval.

“Thirdly, the condition in which the lungs and heart are left after death from the bichloride is favourable.”

The following are Dr. R.’s general conclusions in regard to the bichloride of methylene:—

“1. It is an effective general anæsthetic, producing as deep insensibility as chloroform.

“2. In action it is rather more rapid than chloroform, but to develop effects more of it is required, in the proportion of six parts to four.

“3. It produces a less prolonged second degree of narcotism than other anæsthetics.

“4. When its effects are fully developed, the narcotism is very prolonged, and is reproduced with great ease.

“5. Its influence on the nervous centres is uniform, and it creates little, if

any, disturbance or break of action between the respiring and circulating functions.

"6. Its final escape from the organism is rapid, so that the symptoms of recovery are sudden.

"7. In some cases it produces vomiting.

"8. When it kills it destroys by equally paralyzing the respiring and circulating mechanisms.

"9. It interferes less with the muscular irritability than perhaps any other anæsthetic.

"10. It combines with ether and with chloroform in all proportions."

Dr. R., with characteristic candour and modesty, remarks: "I leave the bichloride of methylene with the profession for its observation and experience. I have proved the agent, by experiment on the lower animals, to be a good general anæsthetic. I have inhaled it myself with safety, and I have administered it to the human subject with success in the extremest operations for which general anæsthesia is demanded. Here, as an individual inquirer, I come back into the ranks and rejoin the rest of my brethren as an observer. Having no other ambition than that of being a physician in the widest sense, having even a painful aversion to specialty, and having no desire to press any subject unduly, I have produced this lecture as a contribution to pure science and nothing more, holding myself as free as any one else to condemn, improve, or approve, as future knowledge, framed and squared and fitted by wisdom, shall determine. When twenty thousand persons shall have slept away pain under the influence of 'Chloromethyl,' as Mr. Spencer Wells has tersely named the bichloride of methylene, and those of them who have slept too deeply shall be counted as fewer than ten, an advance over chloroform will have been proved, but not sooner, nor with less of that tribulation through which we must ever attain to the good that is great and persistently beneficent."

10. *Physiological Action of Chloroform, Sulphuric Ether, Amyline, Carbonic Acid, and Carbonic Oxide.*—BERNSTEIN (*Moleschott's Untersuch.* x. p. 280) concludes that the effects of chloroform are not due to an action on the blood-corpuscles, as Hermann asserted (*Journal of Anatomy and Physiology*, 1867, p. 155), but to a primary action on the spinal cord. He also infers from his experiments that chloroform produces anæsthesia by acting on the sensory nerve cells, and not on the nerve fibres. Important researches on the actions of chloroform, sulphuric ether, and amylene have been undertaken by Professor RANKE, of Munich (*Centralblatt*, No. 14, 1867). He believes that in large doses these substances paralyze the terminations of the motor nerves, and that the early appearance of *rigor mortis* is due to their action on myosine (muscle fibrin). Rigor occurs more rapidly after death from chloroform than from either of the two other anæsthetics, and the same order is observed in the rapidity with which a solution of myosine becomes clouded when exposed to the vapours of these substances. They also coagulate solutions of nerve albumen. From experiments with lower animals, Bernstein concludes that sulphuric ether is a less dangerous anæsthetic than chloroform. One of the most remarkable of the investigations on chloroform is that published by Dr. FAURE (*Comparative Researches on the Effects of Chloroform and Carbonic Acid*, *Archives Gén. de Méd.*, May, 1867, p. 557). Its object is to examine the method in which chloroform and other substances produce anæsthesia; and the general result is that the effects of the inhalation of carbonic acid and chloroform are essentially those of impairment of respiration. Chloroform is said to modify the portions of the pulmonary surface with which it is brought into contact in such a way as to render them impermeable to the air, in virtue of its power of coagulating albumen, and hence to interfere with respiration; and the anæsthesia it causes is asserted to be merely one of the early symptoms of asphyxia. Among other ingenious experiments, the following is given in support of this view. A caoutchouc tube, having one end attached to a vessel containing chloroform, was passed down the trachea, *beyond its bifurcation, into one of the bronchi*, and a large quantity of chloroform was so inhaled by an animal; but no anæsthesia was caused. The tube was then so far withdrawn that *it did not*

extend to the bifurcation; and after a very few inhalations complete anæsthesia ensued. During this condition it was again advanced *beyond the bifurcation into a bronchus*; and although chloroform continued to be inhaled the anæsthetic condition gradually disappeared. Thus, if one lung or a portion of one lung is only acted upon by chloroform, no anæsthesia is produced; if both lungs are acted upon, anæsthesia supervenes: and if, during this anæsthesia, one lung is removed from the direct influence of chloroform, the anæsthesia ceases, notwithstanding the continuance of chloroform inhalation by the other lung. Carbonic acid was found to act in the same way. When carbonic oxide, however, was brought into contact with only limited portions of the pulmonary surface, its characteristic effects were nevertheless quickly produced. It thus appears, according to Dr. Faure, that chloroform resembles carbonic acid in acting only by interfering with respiration, and not as a systemic poison; carbonic oxide, on the other hand, passes through the lungs without producing any changes of such a nature as to interfere with respiration, and its symptoms are caused whenever it is absorbed into the system. Many of the experiments in Dr. Faure's paper are worthy of repetition by independent observers, and his conclusions are certainly of such importance as to require and deserve confirmation.

M. P. BERT has examined whether a stage of excitement occurs during the action of chloroform and ether, in the sense of a true stimulation of the cerebro-spinal nervous system preceding the stage of depression (*Archives Gén. de Méd.*, May, 1867). This he denies, because, among other reasons, if the spinal cord be divided before the inhalation no symptoms of excitement occurred below the incision, but yet reflex power became abolished there; while above the incision the usual movements occurred. These movements, which constitute the symptoms of the stage of excitement, M. Bert refers to irritation of the mucous membranes by chloroform vapour.—*Journ. Anat. and Phys.*, Nov. 1867.

11. *Chloroform and its Medical Uses*.—The *Dublin Quarterly Journal of Medical Science* for August, 1867, contains a paper on this subject by Dr. C. KIDD, which does not add materially to our knowledge, but we call attention to it in consequence of a remarkable statement which he makes, and which we must confess to be altogether new to us. He states that "the highest American authorities have now decided it [ether] is quite as dangerous as chloroform." Dr. Kidd should have given the names of those whom he considers as the "highest American authorities," for we are under the impression that these authorities entertain the very opposite opinion. Indeed, while some advantages are claimed for chloroform over ether as an anæsthetic, its superior safety is surely not one of them.

12. *Action of Sulphate of Quinia*.—EULENBURG (*Comptes Rendus*, March 4, 1867), concludes, from an extensive series of experiments on frogs, that sulphate of quinia acts energetically as a paralyzer of the respiratory movements and of the heart. The former cease from ten to sixteen minutes after the administration of doses varying from half a grain to two grains. The effect on the heart is independent of, and occurred several hours after, the stoppage of respiration. It is supposed to be due to an action on the cardiac muscle itself and on its excito-motor ganglia; as previous division of the vagi did not prevent it. Among other phenomena, it was found that this substance destroys the function of the spinal reflex centres, and afterwards those of the centres of sensation and of voluntary movement in the cerebrum. Some doubt is cast on this research by a subsequent one of M. JOLYET (*Comptes Rendus*, 2 Avril). This investigator found that when sulphate of quinia was injected under the skin of the feet the effects were quite different from those of its injection under the skin of the back. The latter method was adopted by Eulenburg; and Joylet asserts that Eulenburg's principal results were, therefore, caused by the direct action on the heart that such administration admits of, and that many of the subsequent phenomena and their sequence were caused by the natural extension, by imbibition, of the substance injected.—*Journ. Anat. and Phys.*, Nov. 1867.

13. *Action of Curare*.—Dr. HERMANN (*Reichert und Du Bois Reymond's Archiv*, 1867, p. 64) has explained by a simple experiment why a dose of curare

sufficient to kill if introduced under the skin of a rabbit, proves harmless when injected into the stomach. He tied the renal vessels previous to the administration by the stomach, and found that death resulted just as certainly, though not so rapidly, as when the poison was introduced subcutaneously. He believes from this that the immunity by stomach-administration is not due to non-absorption by the mucous membrane of the alimentary canal, but to such tardy absorption as allows of its removal by the kidneys before any poisonous accumulation in the blood. In like manner he accounts for the non-fatal effects of the poison of serpents, and also of various potassium salts, when introduced by the stomach. He explains the fact of even moderate doses of curare poisoning birds when given by the stomach, by supposing that the removal of the poison must be very slowly accomplished as the urine of birds is semifluid. He points out the importance of attending to the state of the excretory organs during the administration of poisonous substances; for if the normal balance between absorption and excretion be disturbed, results may follow that were neither anticipated nor desired.—*Ibid.*

14. *Action of Antiseptic Agents on Infusoria.*—Dr. BINZ, of Bonn (*Centralblatt*, No. 20, 1867), has investigated the effects of various antiseptics upon the animalcules found in vegetable infusions. He particularly examined the actions of these agents upon the paramecium colpoda, so commonly found in putrid infusions of hay. The infusion and the antiseptic were allowed to come into contact with each other on a glass slide, while he observed the result by means of a low magnifying power. Binz classifies the substances that injured the paramecium into two groups: 1. Those that kill by producing osmosis; among which are chloride and hyposulphite of sodium, chlorate of potassium and alum. 2. Those that have a directly poisonous influence, among which are nitric, sulphuric, tannic, and acetic acids, creasote, permanganate of potassium, corrosive sublimate, iodine, bromine, chlorine, and quinia. Of the acids, acetic is the most powerful poison. Solutions of 1 part of corrosive sublimate in 1500 of water, of 1 of iodine in 5000 of water, of 1 of bromine in 12,000 of water, of 1 of chlorine in 25,000 of water were poisonous. Quinia has also a powerful action on the paramecium; 1 part in 400 of water produces instant death, and 1 in 10,000 kills in two hours. Strange to say, salacine does not injure this animalcule, even when employed in a solution of 5 per cent.; and a 1 per cent. solution of nitrate of strychnia produced no injury within two hours.—*Ibid.*

15. *Action of Bromide of Potassium.*—M. J. V. LABORDE (*Comptes Rendus*, July 8) describes the general results of numerous experiments with bromide of potassium on man and on various animals, but principally on batrachians (*Rana viridis*). Four or five minutes after administering from three to six grains to frogs, a slight general excitation, with somewhat tetanic movements, was caused. This was soon succeeded by weakness and then by a condition of flaccidity, during which reflex action was entirely abolished; but the power of voluntary movement was retained until long after this. The heart was but slightly and gradually affected, and continued to contract for several hours after the loss of reflex power. Laborde concludes that bromide of potassium has no special action on the heart, muscles, encephalon, or nerves; but that it mainly and primarily influences the spinal cord. He also studied comparatively the effects of iodide of potassium and bromide of sodium—substances whose chemical constitution might suggest a correspondence with bromide of potassium in physiological action. Twice or thrice as large a dose of bromide of sodium, however, produced no effect; and iodide of potassium, though active, differed greatly in the nature of the symptoms it caused. The exhibition of these substances was effected by placing them, in a state of fine division, on the interdigital membrane; and absorption by this surface was found to be rapid. EULENBURG and GUTTMANN have also examined the physiological action of this substance (*Centralblatt*, May 18). From thirty to sixty grains given to rabbits by the stomach or by hypodermic injection, caused death in from ten to forty minutes. A smaller, non-poisonous dose, produced paralysis and cardiac irregularity. When one or two grains were injected into the subcutaneous tissue of frogs, paralysis

ensued in from ten to fifteen minutes, and it was supposed that this was due to an action on the cord. Neither in these experiments nor in those of Laborde is there, however, any conclusive demonstration given of a spinal action. Eulenburg and Guttman attribute these effects to the potassium and not to the bromine; for similar symptoms were produced by other salts of potassium, while bromine itself and bromide of sodium and of ammonium were not found to have actions resembling that of bromide of potassium.—*Ibid.*

16. *Action and Uses of Phosphate of Soda in Small Doses.*—Dr. WILLIAM STEPHENSON extols (*Edin. Med. Journ.*, Oct. 1867) the use of phosphate of soda in certain derangements of the digestive organs in children.

He recommends it chiefly in "infants who are being artificially reared, and who are liable to frequent derangement of the bowels; also where the phosphatic elements in the food seem deficient, or where articles of food rich in phosphates, such as oatmeal, disagree; where, from the character of the motions, there is a deficient or defective secretion of bile. It is thus of service in cases of chalky stools or white fluid motions. I have also found it of service in many cases of green stools. In diarrhœa, generally, it is more difficult to distinguish the class of cases. In simple diarrhœa, such as we frequently meet with in the summer months, I have not found it of much service alone, although it may be of use when given in combination with other remedies. It is chiefly in that class of cases which are more properly termed duodenal dyspepsia that it is of benefit. Diarrhœa after weaning is generally of this nature, and the cases are often chronic, or of some weeks' standing—the mother generally having exhausted her own and the nearest druggist's resources before applying for advice. It is also of service in some cases where the diarrhœa is due to some general cachexia.

"In adults it has relieved constipation when taken in drachm doses in the morning. I have seen benefit also derived from it where there was a feeling of fullness and sometimes pain in the epigastrium some hours after taking food. In one case of phthisis, the patient said he always felt lighter and better when he took it after his food. I cannot but associate its action with the recorded success derived from the use of the hyposulphite of soda in phthisis; and I am inclined to conjecture that this remedy is to be found beneficial in cases where duodenal dyspepsia is well marked, and that the good results are due to the aid in the assimilation of fatty matter. To theorize, however, is easy, but not always of advantage, and I prefer to leave the matter for further observation.

"The doses in which I generally prescribe it are, for children, from 4 to 10 grains in the food, and for adults, from 20 to 40 grains dissolved in water, and taken after meals. I have several times observed, that when given in too small quantities it had not the same effect."

17. *Action of Galvanism on Blood.*—Dr. T. R. FRASER (*Ed. Med. Journ.*, July, 1867), has lately investigated the action of galvanism on blood and albuminous fluids with a special view of determining the mode in which the galvanopuncture induces coagulation of the contents of an aneurismal sac. When two platinum needles, connected with a six-celled Bunsen battery, were immersed in a solution of egg albumen of sp. gr. 1055, a dense opaque substance of conical shape and acid reaction formed at the positive electrode, whilst a clear, colourless, alkaline jelly grew around the negative pole; the same phenomena essentially occur when solutions of pure albumen and blood are similarly treated. There is no evidence, according to Fraser, that apart from chemical action the galvanic current exerts any influence on the coagulation of fibrin. He attributes the formation of the coagula at the two poles to the action of the acids derived from the electrolysis of the inorganic constituents of the blood, at the positive pole, and of the bases at the negative pole, as products apparently identical in properties are obtained when albuminous solutions are treated respectively with acids and alkalis.

18. *Charcoal Saturated with Gases as an Internal Remedy.*—Mr. W. L. SCOTT, in a paper read before the British Pharmaceutical Conference, observes

that charcoal is taken internally for the purpose of absorbing and masking the action of acidulous and soluble gases which may be in excess, and he asks, Why should it not be made the carrier of gaseous bodies suited for the treatment of certain forms of disease, but which under all ordinary methods are either impossible or very difficult to administer?

His late experiments, he states, "have been directed towards this question, and I am decidedly of opinion that charcoal, saturated with various gases, may hereafter become useful remedial agents. The subject is naturally one which cannot be treated lightly, and which requires some extended and patient labour for its proper development; but as far as I have already gone, the results are, in my opinion, most encouraging.

"In these experiments I have exclusively employed boxwood charcoal as a standard material, and I believe it to be about the best adapted for the purpose. When this had been raised to the temperature of ignition for the second time, a current of the particular gas or vapour it is desired to absorb is passed over it, with a gradually increasing pressure, until the retort and its contents are perfectly cold. By particular management the charcoal can be powdered, and even granulated, without being denuded of the gas it has absorbed.

"I am not yet in a position to offer a complete series of experimental results and deductions therefrom, bearing upon the therapeutical value of impregnated charcoal; but perhaps the trial I am about to describe may not be deemed entirely without interest.

"Three healthy young dogs were kept in a large chamber, specially arranged, at a temperature of about 70° F., and were made to breathe large and gradually increasing quantities of pure oxygen for a considerable period (their diet also being carefully looked after), until such time as the heart-action and general appearance of the animals indicated that the oxygen had done its work, and that fibrinous depositions might reasonably be looked for. The animals were removed from the chamber, it being evident that a continued oxygenization would probably have been fatal to all; one was simply set free, and fed as usual, but it died after about a fortnight; a second was killed instantly, and upon being opened, and the heart divided, it was found that all the valves and a number of the cardiac vessels were more or less plugged with fibrinous concretions.

"The third animal was fed and treated as usual, except that *drachm* doses of granular *ammoniated* charcoal were administered, at first three times, and latterly twice a day. In six weeks the dog was not only living, but had recovered its usual health. At the expiration of another fortnight the animal was killed by a blow, and examined. The appearance of the viscera was natural, except a slight renal congestion, and the heart, on being opened, showed hardly a trace of fibrinous deposition; it had *evidently been dissolved away*."—*Medical Press and Circular*, Nov. 6, 1867.

19. *Uses of Bisulphite of Calcium in Pharmacy*.—Mr. W. L. Scott, in a communication read before the British Pharmaceutical Conference, expressed the opinion that the bisulphite of calcium is capable of many useful applications in the pharmaceutical laboratory.

For ointments, a fluidrachm to each pound is quite sufficient to preserve them, while it has no injurious action whatever, and is quite compatible with the great majority of ointments and oily preparations—a remark which does not apply to the alkaline or sulphites or bisulphites which have from time to time been brought forward for similar purposes.

Beef-tea or broth in hospitals, or otherwise, may be prevented from turning sour by stirring in a few drops of the bisulphite of lime solution to each pint of the soup; and the same plan will enable us to keep jellies, which ordinarily decompose so rapidly in the organic germ-laden air of the sick-room, for many days unimpaired; these are, in my opinion, considerations of some moment in all circumstances, but most especially in the habitations of the poor.

Clothes or matting, soaked in the same solution and hung up, act as disinfectants of the most effective kind, and do not exhale the peculiarly unpleasant odour of carbolic acid, or the irritating vapours, so distressing to the bronchial system, of chloride of lime.

I have successfully employed the bisulphite of calcium for the preservation of numerous anatomical and other specimens, as it does its work perfectly, and without occasioning the great changes of colour and contraction of muscular structure so frequently produced by ordinary antiseptics; moreover, its special advantage over the preparations of mercury and arsenic lies, to my thinking, in the fact that it is not poisonous, and can therefore be handled with perfect safety.

There are numerous substances employed in pharmacy—such as musk, castoreum, lard, and other fatty matters—which are more or less injured by decomposition or keeping for any length of time. To these the bisulphite can be applied with considerable advantage.—*Med. Press and Circular*, Nov. 6, 1867.

20. *Mustard Paper*.—M. RIGOLLOT, a Paris pharmacien, has, under the name of *papier sinapisé*, contrived an elegant preparation which embraces all the advantages of the mustard cataplasm without incurring the risk of its inefficiency, owing to the loss of power in the flour of mustard. He has done this by extracting the fixed oil while retaining the rubefacient principle. A piece of the paper of the required size is put in water for a few seconds and placed wet on the part, whereon it is bound with a handkerchief. It does not cost more than the ordinary mustard plaster, and is always ready and promptly efficacious.—*Med. Times and Gaz.*, from *Bull. de Thérap.*, Sept. 30.

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICAL MEDICINE.

21. *Nature of Tubercle*.—There is not at this moment a question of greater interest and urgency than the discussion of the pathology and natural history of pulmonary tubercle. Two opinions confront each other. The first considers all the lesions of the tuberculous lung as dependent on tuberculosis; that these lesions have their seat in the intervesicular walls, or that they reside even in the interior of the vesicle. In the opinion of the German school, on the contrary, tubercle exists exclusively in the wall of the vesicles; and the elements which fill the cell-cavity are epithelial products of inflammatory origin, allied to what is called caseous pneumonia. These opinions were brought into contact at the Paris Congress. M. Villemin ably supported the first doctrine. According to this view, the gray granulation and the matter of caseous pneumonia are equally tuberculous lesions; these elements, which are wrongly distinguished, both proceed from the cell-nuclei which form part of the septum of the vesicles. Those which accumulate in the cavities of the pulmonary alveoli owe to compression the flat surfaces which give them an epithelial aspect; but they are in reality formed of proliferous cells, rapidly undergoing fatty metamorphosis. M. Villemin rejects, besides, the doctrine of the specificity of tuberculous lesions. The granulations have their analogues in those of the syphilitic gummy deposits which have sometimes been confounded with them; and, moreover, the elements which constitute them have their physiological representatives in those of lymph and of the lymphoid tissues. In discussing the question of the inoculability of tubercle, M. Lebert declared that, by injecting into the veins of animals tuberculous products, and other morbid products, such as those of melanosis and carcinoma, or various substances, mercury and charcoal, he has produced embolism in the capillaries of the lung, and has seen inflammatory lesions supervene, of which some resemble those of tuberculosis. M. Berpet (of Cercoux) believed in the transmission of tubercle by respiratory exhalation. M. Seco y Valdor (of Madrid) related several cases he had observed of transmission of phthisis by cohabitation. M. Villemin's experiments, confirmed in most points by those of Mr. Simon and Dr. Marcet in this country, are interesting from all points of view, but especially so from their tendency to throw once more into the arena the question of the nature of pulmonary tuber-

cular disease. If it be true that the same condition can be induced in the lung by the inoculation into the tissues of charcoal, pus, mercury, what you please, as by the inoculation of tubercle, then this certainly would not indicate that tuberculosis is a specific, virulent, and inoculable disease, as was the first conclusion from these remarkable experiments.—*British Med. Jour.*, Nov. 2, 1867.

22. *Inoculation of Animals as a Means of Diagnosis in Tubercular Phthisis.*
—Dr. Wm. MARCET, in a paper read before the Royal Medical and Chirurgical Society (June 25, 1867), remarked that we are indebted to Dr. Villemin for the very remarkable discovery that tubercular phthisis can be inoculated from man to animals; rabbits and guinea-pigs, which are naturally liable to the disease, being fit subjects for inoculation. When I became acquainted with Villemin's papers, I happened to be engaged with an investigation of the expectorations in phthisis, and it struck me that, if his results were correct, by inoculating the expectorations of phthisical patients, containing tubercular matter, to healthy rabbits or guinea-pigs, these animals would become tubercular; thus I thought that a physiological method of diagnosis of great importance might be arrived at, for should the inoculated animals, after a certain time had elapsed, either die tubercular, or, on being killed, exhibit tubercles in any part of their body, there could be no more direct evidence as to the nature of the diseased condition of the patient whose expectorations had been used for inoculation. If the result of the inquiry was found to be in accordance with this view, I had yet to show that the non-appearance of tubercles in guinea-pigs inoculated with expectorations from a supposed incipient case of phthisis might be considered as evidence of the patient's lungs not being tubercular. This second part of the question is more difficult to solve than the first; I am engaged with it at present. Twenty-two guinea-pigs were submitted to experiment. The expectorations of nine different patients suffering from phthisis were inoculated to as many guinea-pigs; in two cases two animals were inoculated respectively with the sputa from the same patient. Of these nine patients, eight could be safely considered in the second stage of phthisis, the tubercles undergoing softening and being expectorated. One patient appeared to be in the chronic third stage, with cavities contracting. The sputa of one well-diagnosed case of bronchitis was inoculated to a guinea-pig, for the sake of comparison, and one young animal of the same litter as two which were inoculated was kept without being inoculated for a similar purpose. This will account for thirteen of the animals. The remaining nine were used in these experiments as follows: Two guinea-pigs were inoculated with the expectorations of two cases of doubtful phthisis. One animal was inoculated with blood taken from a body during a post-mortem examination at the Brompton Hospital; another with blood procured from the last animal eleven days after the former operation; two were inoculated with pus taken from the chest in a case of empyema, where paracentesis thoracis had been performed; lastly, three sound guinea-pigs, kept with those that had been operated on, were killed in order to ascertain whether their internal organs were free from tubercles. The following results were obtained from the inoculation of the eleven guinea-pigs with the expectorations from phthisical patients: One of the animals died three days after the inoculation, obviously from some cause independent of the influence which the inoculated matter might have exerted towards the development of tubercles, and in this case no tubercles could be found in the body of the animal. Six guinea-pigs died, and every one of them exhibited most positively tubercles to a greater or less extent. Of these five died between forty-three and fifty-six days after being inoculated, and one case proved fatal in twenty-one days, on February 7, the cold weather having obviously weakened the animal, and contributed to the rapid termination of the disease; in the present case the guinea-pig's spleen alone was found tubercular. Four other guinea-pigs were killed at periods varying from forty-seven to fifty-four days after inoculation, and tubercles were found in every one of these animals. There are seven more cases of inoculation to account for—1st. Inoculation with expectorations from a patient exhibiting doubtful signs of tubercles. Results: Death two after inoculation from the effects of the operation; no tubercles found. 2d. Inoculation from another doubtful case of phthisis; ani-

mal killed fifty days after the operation; no tubercles found. 3d. Inoculation with blood from tubercular human dead body; animal killed eighty-three days after inoculation; tubercles found in lungs, liver, spleen, lymphatic and mesenteric glands. 4th. Inoculation with blood from last animal eleven days after the operation; guinea-pig killed seventy-two days later; no tubercles. The stage of the disease at which the blood was taken may have been too early to be productive of tubercles; hence the negative result. 5th and 6th. Inoculation of two guinea-pigs from the case of empyema; result, one animal died eight days, and the other was killed fifty days, after inoculation. The first guinea-pig dying so soon appears to show that it was tubercular when operated, which does away with the value of the experiment. The second exhibited tubercles in the lungs, liver, spleen, lymphatic and mesenteric glands. 7th. Inoculation with the expectorations from the case of bronchitis. The animal was found, on being killed eighty-two days after inoculation, in no way tubercular. Finally, not one of the three animals left sound, and which had lived with those that had been inoculated, presented, on being killed and examined, the slightest trace of tubercles, although they had been for about two months under precisely the same conditions as the others; and the young guinea-pig of the same litter as two of the inoculated ones, and which was preserved healthy, is now growing rapidly, and appears in perfect health. I may add that Mr. M. J. Salter, who assisted me in these experiments, has witnessed every one of the results which I have recorded in the present communication. In conclusion, I believe the results of the experiments and observations related in the present paper to be as follows: 1st. The inoculation of guinea-pigs with the expectorations of patients suffering from phthisis will, at all events in a certain stage of the disease, and possibly, throughout, give rise to the formation of tubercles in the operated animals. 2d. If two or more guinea-pigs inoculated with human expectorations, brought up by coughing, should die from tubercular disease, or should, on being killed at least thirty days after inoculation, exhibit tubercles, this may be considered as a direct and positive evidence that the person whose expectorations were inoculated was suffering at the time from tubercular phthisis. 3d. If two or more guinea-pigs be inoculated with the expectorations coughed up by a person considered to be in the third stage of phthisis, and if these animals do not die of tubercular disease, or exhibit any tubercles when killed at least fifty days after inoculation, it may be considered that in the present case the softening of tubercles and the secretion from the pulmonary cavities are arrested, the patient being in a fair way of recovery. 4th. Other materials besides the pulmonary expectorations taken from the human body in certain, if not in all, stages of phthisis, as blood and pus, appear to be also possessed of the power of causing the formation of tubercles in guinea-pigs when inoculated to these animals. 5th. The spleen appears to be the first, and the lungs one of the last, organs in guinea-pigs to be attacked with tubercular disease.—*Med. Times and Gaz.*, Sept. 28, 1867.

23. *Pathology of Progressive Locomotor Ataxy.*—Dr. USPENSKY, from his experience of this disease in St. Petersburg, has been enabled to gather the following facts: 1. Impaired co-ordination of movements is not a specific affection, but rather a symptom of diseased brain or spinal cord. 2. In the majority of cases, there is diminished sensation. Patients have been repeatedly observed who had been long affected with well-marked ataxy of the upper and lower extremities, and yet were still perfectly susceptible to tickling, touch, pressure, changes of temperature, and could judge of the weight of bodies. 3. Patients lose their susceptibility to tickling first, then that to touch and pressure, and, last of all, the power of appreciating differences in temperature. Patients may present well-marked ataxy of the upper and lower extremities, and a complete loss of sensation on tickling, touch, pressure, etc., and, at the same time, be able to appreciate the changes of temperature so perfectly that a difference of one-half of a degree centigrade can be perceived.—*Brit. Med. Journ.*, Nov. 16th, from *Centralblatt f. d. m. Wissenschaften*, 1867.

24. *Artificial Diabetes.*—ECKHARD (*Beiträge zur Anat. und Phys.*, Bd. IV. Ht. 1, 1867) has very decidedly advanced our knowledge of the parts of the

nervous system concerned in the production of diabetes when the floor of the fourth ventricle is punctured. It is well known that diabetes follows the puncture even although the vagi and cervical sympathetics have been previously divided; these, therefore, do not form the efferent channel through which the puncture perverts the action of the liver. On the other hand, Eckhard found that he could never produce diabetes by puncturing the floor of the fourth ventricle after previous division of the splanchnic nerves. So that it is through these nerves that the influence passes from the medulla oblongata. Simple section of the splanchnics was in one case followed by diabetes, but never again, though the experiment was repeated more than a hundred times. As the splanchnics have been shown to be the most important vasomotor nerves in the whole body, the negative results of these experiments are sufficient to show that Schiff is wrong in supposing that diabetes may be due to dilatation of the hepatic vessels. Irritation of the distal portions of the divided splanchnics was *not* followed by diabetes; so that some apparatus must intervene between the floor of the fourth ventricle and the splanchnic trunks, which require to be irritated ere the diabetes could be established. Proceeding by the method of exclusion Eckhard irritated such of the vertebral chain of sympathetic ganglia as lie within reach. Strange to say he found that section of the inferior cervical ganglion was always followed by marked diabetes. Section of the two first thoracic ganglia was followed by the same result, though it was less marked. Section of the roots of the last cervical and first dorsal nerve was in some cases followed by diabetes; in others the result was negative: the result was always negative when the posterior roots only of these nerves were divided. He has not yet satisfied himself of the results of irritating the divided nerve-roots. The research is not yet complete, but he thinks it is probably the inferior cervical and upper two thoracic ganglia which form the nervous apparatus specially acted upon by the puncture of the fourth ventricle in giving rise to diabetes; at any rate, the research up to its present point, shows that some parts of the central nervous system must be irritated before artificial diabetes can be produced.—*Journ. Anat. and Phys.*, Nov. 1867.

25. *A Clinical Study of Stimulation in Typhus*.—This is the title of a highly instructive paper by Dr. JAMES B. RUSSELL, contained in the numbers of the *Glasgow Medical Journal* for October and November, 1867. The author's object is to show the results of a course of practice in which alcohol was employed as a stimulant. It is founded on the study of 1538 cases of typhus fever treated in the City of Glasgow Fever Hospital between the 25th of April, 1865, and 1st of May, 1867.

The author states that he does not intend to discuss the questions whether alcohol is purely stimulant or partly food, or how it leaves the system, or whether it leaves it at all. "It would not influence," he says, "my practice in the least, although it could be demonstrated that every drop of alcohol is assimilated and detained in the tissues, or that none of it is assimilated and detained. All agree that alcohol is a stimulant—nay, more, that its first and most evident action is that of a stimulant. It may or may not be food; but whatever may be the truth in that respect, if not stimulant, it is nothing; if a food, it is a highly stimulant food. It follows, therefore, that those who give alcohol as a stimulant have all the benefit of whatever nutritive value it may possess, if any, and avoid the evils of narcosis, or impairment of function into which stimulation soon passes, while those who give alcohol as a food are liable to all those evils. All food is stimulant to some degree, but not to a degree which makes this property the chief characteristic. Good beef-tea is decidedly stimulant, and were it so in the sense that alcohol is, then I should give it in fever with the same caution and under the same restrictions as alcohol."

In preparing this paper, Dr. Russell has had a twofold object—both "to exhibit as minutely and faithfully as possible the practice pursued, and also to deduce from the statistics of stimulation such information regarding the natural history of typhus as might be hoped for from the study of the impression left upon those statistics by the circumstances of each case. Although no such classification has been adopted, it may be observed that the various branches of

this statistical study fall into two groups. In one we seek for variations in the amount, duration, &c. of stimulation, due to causes which are well known to influence the course of the disease; while in the other we proceed in the opposite direction, and seek to explain certain variations by discovering influences sufficient to account for them. To the former class belong age and sex; to the latter suckling, pregnancy, &c.; and partly to both classes our inquiring into the relations of the day of fever to stimulation. The common property through which these and all other circumstances are related to stimulation is, in so far as they modify the vital force on the maintenance of which the patient depends for a safe transit along the beaten path of the fever. Alcoholic stimulants are a two-edged sword in the hands of the practitioner. If employed within the range of their stimulant action, which is variable for every case, they are helpful; if pushed beyond, into their narcotic action, they impair the vitality, which it is our aim to augment; even as pure stimulants, they may be used unnecessarily, so as to push and urge the labouring energies of the system to a sudden breakdown, half-way in a journey which might with leisure have been easily accomplished. In any case this definite journey lies before the fever-patient. Whatever the advancement of knowledge may add to the power of the physician, certainly, at its present stage, treatment has no efficiency except as ancillary to the vitality of the patient. The recognition of this as a fact in the natural history of fever seems to me to be the secret of its successful treatment. In the course of this paper, especially of the latter part, I have pointed out many facts, the tendency of which is to prove that there is a determined course and climax in the disease. Individual differences from age, sex, habits, social circumstances, &c., do not obliterate this periodicity, but at most exhibit it in some as death, in others as a crisis; now in a demand for stimulation, marked by intensity, as shown in the numbers requiring it, in the amount required, or in the duration of the requirement; there being always some shock to indicate the arrival at, if not the passage over, a period of natural and inevitable trial to the vitality. The action of the physician is thus limited purely to intelligent and minute observation; to the employment of every means to relieve the constitution of all *impedimenta*, and equip it for a journey which must be traversed; to the acquisition of an intimate acquaintance with every inch of the road, and to the judicious use of such means as are at his disposal to sustain the vitality of the individual until all the dangers are past. There is a certain perennial element of truth in this position. It is external to the system that we must look for the greatest prospective triumphs of medicine over zymotic disease. Prevention will always be better than cure. What Lister seems to have accomplished in surgery is the perfection of our hopes in medicine. The poison of typhus has as definite an existence as that of the rattlesnake, or as arsenic. We may be able some day to isolate it, as well as them. If we have in carbolic acid or sulphurous acid an agent which will neutralize and destroy specific poisons, it still remains true that outside the body the work must be done, to be done effectually. The immediate result of their introduction into the system is to set agoing a process of perverted nutrition. The administration of the sulphites, for example, may even destroy the active poison, and stop this process; but, for the completion of the work of cure, we must still fall back upon the vitality of the system, and trust to the activity of its functions for the elimination of the morbid products. We may even, therefore, hold it impossible that any advance in the science of medicine can unseat this as the first principle in our treatment of specific disease—the support of the vital energies in this natural tendency through disease to health.”

26. *Treatment of Zymotic Diseases by the Administration of Sulphites.*—Prof. POLLI, of Milan, read before the medical section of the British Medical Association an interesting paper on this subject. He recommends for internal administration, in a *curative* point of view, “the sulphite of magnesia, both as containing more sulphurous acid, and also as being pleasanter to take. As a prophylactic, I recommend the hyposulphite of soda, when it does not act too much as a purgative; and, for external use, I advise the sulphites and bisulphites of soda, which are more soluble than the magnesian salts. On trial, these sulphitic preparations will be found of much value in more particulars

than one. The sulphite of magnesia will always be tolerated by the stomach, even in extreme cases of irritation. It never acts as a poison, and therefore an erroneous dose will never be productive of evil—a quality which it alone possesses among those remedies which have any decided value. Its extreme cheapness is another merit; it is, perhaps, the cheapest remedy in the whole materia medica; and, when its real value has been ascertained, its cheapness will still more be appreciated."

Dr. P. does not claim that these salts are a panacea. He says they do not act as "poisons towards the several morbidic ferments which we have supposed to be the cause of the several zymotic diseases. They do not kill the catalytic germs of the organic poisons; but they react on the material components of our own organism, rendering it, by their presence, incapable of being acted on by these catalytic germs. It is, therefore, easily comprehended how extensive and beneficial must be the use of these sulphites, when it is remembered that among zymotic diseases we class the most numerous, the most obscure, and the most fatal of all diseases."—*Brit. Med. Journ.*, Nov. 16, 1867.

27. *Picric Acid in Intermittent Fevers*.—Picric acid is said to be an efficacious remedy in intermittent fevers. Persons affected with such types of fever, upon whom quinine has lost all its beneficial effects by continuous usage of it—and this is the case with some of our soldiers who return from India—are reported to derive benefit from the use of picric acid and pierates, by Dr. Aspland, at the military hospital at Dukinfield. The knowledge of this fact, says Dr. Calvert, may be useful in districts in which exist poor populations, for it affords them a cheap febrifuge; and, moreover, picric acid is not dangerous, as arsenical preparations are; nor does it derange the stomach like quinine.—*British Med. Journ.*, Nov. 2, 1867.

28. *Digitalis in Rheumatic Fever*.—An elaborate and practically valuable paper on the treatment of rheumatic fever by digitalis, has been recently communicated to the Imperial Academy of Medicine at Paris, by Dr. OULMONT, of L'Hôpital Lariboisière. Twenty-four cases of rheumatic fever, and a few cases of pneumonia and typhoid fever, were treated with this substance; but the important therapeutic deductions that are contained in the paper were derived from the first of these diseases only. As much as fifteen grains of the digitalis powder, in the form of infusion, was given in the twenty-four hours, and continued at this rate until emesis was caused, when the quantity was reduced to such doses as could be tolerated by the stomach. Among the conclusions that Dr. Oulmont arrives at are the following: 1. In acute rheumatism, digitalis, when given in the above doses, lowers the pulse by from 10 to 40 beats, in three or four days; 2. The diminution of the pulse-rate is accompanied with a fall in the temperature amounting to several degrees; 3. Digitalis causes a rapid and complete disappearance of the symptoms when the fever is unaccompanied with complication; 4. It appears to prevent those exocardial and endocardial complications that so commonly occur in this disease; 5. No cerebral symptoms occurred in any of the cases; 6. The excretions were unaffected: the abundant perspiration of rheumatic fever was neither increased nor diminished; and the urine was not modified in quantity or quality, digitalis failing to excite diuresis in this as in other febrile affections; 7. Digitalis has no action on the rheumatism proper—it acts only on the fever by lowering the pulse-rate and the temperature.

Dr. Oulmont also discusses the *modus operandi* of digitalis on the circulation and temperature. He believes with Traube and Von Bezold, in opposition to Schiff and others, that the pneumogastric nerves possess the function of cardiac inhibition; and he adheres to the view of digitalis having a stimulating action on these nerves. But as such a cardiac action is insufficient to account for the effect on the temperature, Dr. Oulmont feels inclined to express his concurrence in the opinion of an independent influence by digitalis on the vaso-motor nerves.—*Ed. Med. Journ.*, Nov. 1867, from *Bull. Gén. de Thérap.*, 8me Liv., 1867.

29. *Treatment of Cerebral Congestion and Hallucination by Arsenious Acid*.—Dr. LISLE states that insane persons often present more or less strongly

marked symptoms of cerebral congestion. Patients who suffer from hallucinations always do; but of 193 of the latter class, treated with arsenious acid, 131, or 67 per cent. were cured, and 29 were sensibly and permanently improved. Hallucination has hitherto been considered as a symptom of madness; it is really but a complication of it, almost always a serious one; it is the most characteristic symptom of cerebral fever. Arsenious acid is an infallible specific in this disorder. The dose varies from five to sixteen *milligrammes*, administered thrice during the day, before meals.—*Brit. Med. Journ.*, Oct. 26, 1867.

30. *Bromide of Potassium in Epilepsy*.—M. NAMAIS has communicated a note to the French Academy on the therapeutic employment of bromide of potassium in epilepsy. His experience confirms and extends the statements that first emanated from the Edinburgh School of the benefits of this method of treatment. Fifteen grains thrice daily was usually given by this physician; but on one occasion, so large a quantity as 220 grains was administered in twenty-hours. By this, however, delirium and inability for movement were caused. The employment of the drug had therefore to be suspended; but during this suspension the epileptic fits became again frequent and severe, and only diminished on a return to this remedy in more moderate doses.—*Comptes Rendus*, 20 Mai. 1867.

Recent investigations have shown that the paralytic symptoms of such an overdose as M. Namais administered are among the physiological effects of bromide of potassium. M. Laborde has made a most extensive series of experiments, from which he concludes that this substance has no special action on the encephalon, heart, muscles, or nerves; but that it mainly influences the spinal cord, and that by suspending its reflex function.—*Comptes Rendus*, 8th July, 1867.

Eulenbourg and Guttman have also found that paralysis is the most prominent symptom of a large dose, and they agree with Laborde in ascribing this paralysis to an action on the spinal cord.—*Eld. Med. Journ.*, Nov. 1867.

31. *Compound Tincture of Benzoin in Chronic Dysentery and Mucous Diarrhœa*.—W. N. CHIPPERFIELD, Act. Phys. General Hospital Madras, states (*Madras Quarterly Journ. of Med. Sc.*, June, 1867) that he has employed the compound tincture of benzoin in chronic dysentery and mucous diarrhœa. The following is the formula he generally uses:—

For Adults.—℞.—Pulv. acaciæ, gr. xxx; tinct. benzoin. comp. fʒj—fʒij; tinct. opii ℥xx—℥xl; aq. fontan. vel carui, ad fʒvj.—M. A fourth part to be given every four hours.

For Infants and Children.—℞.—Tinct. benzoin. com. fʒj; vini ipecac. fʒj; syrupi fʒss; aq. fontan. ad ʒijss.—M. One to three teaspoonfuls every two, three, or four hours.

"Should the stools," he says, "be frequent, very relaxed, but semi-feculent, from fʒss to fʒj of the compound tincture of kino may be added to each dose for adults, and a proportionate quantity for children; or the infusion of cusparia or decoction of hematoxylon may be used as a vehicle instead of water. If opium be contraindicated, it may be omitted; or, if necessary, a proper quantity may be added to the mixture for children.

The exhibition of benzoin does not in the least interfere with the giving of other remedies when deemed necessary. Thus in asthenic and scorbutic cases, quinine (liquor quinae amorphous) may be added in any needed quantity to the mixture; or one or two doses may be replaced by a draught containing from ℥xx to ℥xl of liquor ferri pernitris. Lime juice or Bael sherbet may be given with the medicine.

"When laxatives are needed to insure the emptying of the bowel, castor oil, or rhubarb, or jalap may be given in the early morning, the benzoin being continued through the day. From half a grain to a grain of podophyllin, with a grain of opium or half a grain of extract of belladonna, given at bedtime is an adjunct to the benzoin treatment, which I often use with advantage when the liver is inactive. This dose may be given for three or four consecutive nights, or it may only be required once or twice a week. Absence of bile from

the stools, an icteric tint of the conjunctiva, and the presence of bile pigment in the urine, are guides to the exhibition of podophyllin, provided there are no signs of obstruction. The benzoin mixture may also be alternated with the mineral acids when their use is indicated."

32. *Intestinal Puncture in Asphyxiating Pneumatosis.*—Under the advice of Dr. FONSSAGRIVES, intestinal puncture, as a last resource, has been several times practised at Toulon on two patients suffering with tympanitis. In the first case, the abdomen formed an immense mass; the patient was perfectly cyanosed and suffocating. On July 15th, M. Lafargue inserted an exploring trocar into the most distended part of the lower umbilical region. The gas escaped so violently as to extinguish a candle. The danger of asphyxia was thus removed; but the distension reappeared the next day, notwithstanding the use of ice and compression. Two fresh punctures were made in different places, and gave so much relief that the life of the poor patient was prolonged until July 20th, when he succumbed to his disorder without suffering from the other complication. The success and the harmlessness of the operation are still more evidenced in a second case, in which, notwithstanding all the means employed, Dr. Ressequet found the patient half asphyxiated. He made a puncture without any ulterior trouble, and five others were afterwards successively made, until the gases were naturally evacuated, and the patient cured. These cases give solid reasons for the practice of this method, so apparently dangerous, but so really harmless.—*Brit. Med. Journ.*, Nov. 16, 1867, from *L'Union Médicale*, Oct. 23, 1867.

33. *Non-Communicability of Cholera to the Lower Animals.*—In the *Nederlandsch Archief* (III. 1 Aflevering) Drs. H. SNELLEN and H. G. MILLER, detail a number of experiments performed with a view to solve the question: *can cholera be communicated to the lower animals?* They were made, during the epidemic of 1866, so fierce in Utrecht, on pigs, dogs, monkeys, rabbits, poultry, pigeons, frogs, and fishes. "In thirty-seven instances food mixed with feces was administered. The fecal matters were derived from different cholera-patients, quite fresh or in different stages of decomposition. Seven times they administered vomited matters; eight times different parts of the body; once a poultice which had lain on a cholera-patient. Moreover they five times used hypodermically the feces, vomited matter or blood of a cholera-patient, twice such matters were injected into the jugular vein, once they were given in the form of enema. On one animal the inspiration experiments were fully tried, on all the others they were tried in some degree, all having been exposed for a longer or shorter period in a damp cellar to the exhalations of the matters employed. Similar experiments were performed at Amsterdam by Drs. Stokvis and Guye, and in Berlin by Drs. P. Guttman and A. Baginsky. A retrospect of all these experiments leads to the conclusion, that to the animals operated on, *cholera is not communicable by infection.*

Are animals then not susceptible of cholera, or is it not by infection, that this disease is transmitted? From the results of their own further investigations, as well as from the experience of the directors of the Zoological Gardens at Rotterdam and Amsterdam, the authors come to the conclusion that animals are not susceptible of cholera. "It is remarkable," they say, "that the statements respecting cholera in animals appear the more positive and convincing, in proportion as they are of older date, and come from more distant parts." They show that "before a coexistent epizootic be admitted to be cholera, sound criticism requires: 1, that there be conformity in the morbid process; 2, that anatomico-pathological conformity be established on post-mortem examination; and 3, that the outbreak of the epidemic also do not want the marks recognized as peculiar; this last, with respect to the time and place of outbreak, as well as to the nature of the contagion.

"At present 'rinderpest' prevails contemporaneously with 'cholera as an epizootic. No one, for this reason, thinks of a connection between cholera and rinderpest. If the facts connected with the subject were less known to us, as is the case with communications of earlier date and from more remote localities,

the contemporaneous occurrence of the two might probably be received as a strong proof.

"The rinderpest at present prevailing has only this in common with cholera, that the disease is limited to particular animals. Only ruminants are susceptible of it. Man is not attacked by it. The fact is consequently not so anomalous, that cholera cannot be conveyed from man to other animals."—*Ibid.*

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

34. *Advantage of Completely Arresting the Current through the Sac in the Treatment of Aneurism.*—Dublin surgeons, to whom we owe the establishment of the treatment of aneurism by compression, advocate such a degree of compression as will send the blood gently flowing through the sac; layer after layer of coagula being expected to form. Arrest of current and clotting of the blood in the sac were deprecated; but Dr. E. D. MAPOTHER, in a paper read before the Surgical Section of the British Medical Association, at its last meeting in Dublin, related the two following cases, which he thinks show that these events are desirable.

CASE I. J. D., æt. 25, healthy, was admitted into St. Vincent's Hospital, January 14th, 1865, for right ilio-femoral aneurism, which had begun without injury five months before. Digital and partial instrumental pressure having failed, I tried to stop the common iliac with an elastic compressor, the patient being kept under chloroform for twelve hours. No clot formed. An anthracoid slough formed at the point of pressure.

Five days afterwards, another attempt was made, after the following preparatory steps. The abdomen was made lank by emptying the bowels and bladder; the limb was raised, bandaged, and fixed to aid venous return, and to render increased flow of blood for muscular action unnecessary; and the sac was compressed by an elastic roller, so as to contract the space to be filled by the clot as much as possible. At Dr. O'Ferrall's suggestion, the superficial femoral was stopped, so as to keep the sac full. Signoroni's clamp was then fixed over the common iliac artery for four and a half hours, when the tumour was found solid and pulseless, the common and external iliacs being still pervious. Absorption and complete cure followed.

CASE II. J. B., aged 25, healthy, was admitted into St. Vincent's Hospital, May, 1866, for left popliteal aneurism, which followed a strain a fortnight before, while getting down from his cab. The sac was as large as a turkey egg, and towards the biceps appeared diffuse. Digital and elastic instrumental pressure failing, stoppage as complete as could be achieved in a very restless patient was kept up for five hours, when the sac was found pulseless. Thirty-six hours afterwards, pulsation recommenced. After three other attempts, unsuccessful because chloroform was refused, the femoral at Scarpa's triangle was compressed, and the flow of blood out of the sac was impeded by tight bandaging and elevation of the leg, distal pressure on the popliteal not being possible. The patient was kept apathetic, not insensible, with chloroform, for nine and a half hours, when the sac was found hard and pulseless. At the compressed point, a superficial slough formed; but with this exception, the recovery was rapid and perfect.

In both cases bromide of potassium internally, and ice locally, gave aid by lowering the circulatory force. A good meat diet was given, to increase the plasticity of the blood; but drink was not restricted, for it is unphysiological to suppose that thus we can thicken that fluid. Fresh vegetable food augments the plasticity of the blood in scurvy, and may be reasonably allowed in the diet of a patient with aneurism.

Pain has been the great obstructive to partial compression; and complete pressure would be unendurable without chloroform.

Dr. M. further states that "distal pressure should precede and accompany proximal pressure: for thus the sac is kept full of blood at rest, and the resulting clot will equal its cavity. During the many hours which elapse before the separation of clot and serum is complete, the sac will probably contract on the clot, while the serum oozes away or is absorbed. In popliteal or antecubital cases, distal pressure being impracticable, Mr. Hart's flexion plan may achieve the same object. I doubt that aneurism has ever been cured by such pressure as would only lessen the calibre of the artery leading to the sac; for then the flow of blood being quickened, and the efferent vessel being larger, the blood would not remain long enough to clot. The blood flowing in would carry the agent to which the fluidity of fibrin is due; but, if the blood in the sac be isolated, this volatile agent may permeate its coats. In cases said to be cured by partial compression, it is probable that, the pressure having been increased to the amount of complete arrest for a short time, clotting in the sac, or plugging of the artery below it, produced the cure; for the pulsation is usually reported to have suddenly ceased. Digital pressure has of late been most successful, because it is usually employed to the degree of complete arrest. The evidence to prove that, in cases cured by partial compression, the sac is filled by laminated fibrin, is most insufficient; and, in fusiform aneurisms or sacculated aneurisms freely opening into the ruptured artery, it is impossible to conceive such an occurrence. In the fifty-three cases cured by compression, and detailed in the *Nouveau Dictionnaire de Médecine et de Chirurgie*, nine solidified under twelve hours, and four under four hours, in which time this much talked of stratification could not have been accomplished."

Dr. M. claims for this method greater rapidity and greater certainty than partial compression, and far greater safety than deligation.—*Brit. Med. Journ.*, Oct. 5, 1867.

35. *Rapid Pressure Treatment of Aneurism.*—Dr. W. MURRAY read a paper before the Surgical Section of the British Medical Association, at its late meeting in Dublin, the object of which was to prove, first, that aneurisms of the largest size can be treated successfully by a process which is so rapid in its operation as to occupy less than an hour; and, second, that the cure takes place in these cases by coagulation of blood in the sac of the aneurism, and not, as has been hitherto believed, by the deposition of fibrin.

"In this mode of treatment the patient is put fully under the influence of chloroform, that we may be enabled to apply a very powerful pressing instrument on tender or sensitive parts, such as the site of the abdominal aorta. The full administration of chloroform is further necessary to relax the muscular system, which is an important condition of success, as the slightest movement of the pressing instrument by the muscular action of the parts pressed on, is fatal to this process of cure. I would draw special attention to the next part of the treatment, as success is dependent upon the care with which this is carried out. *It is the complete arrest of all movement of the blood in the aneurismal sac.*"

Dr. M. advocates the application of distal as well as proximal pressure.

"Aneurisms," he says, "requiring pressure on the abdominal aorta are perhaps least dependent on distal pressure, as the collateral circulation to the lower parts of the body is here so limited as to render a current into the distal orifice of the aneurism improbable. In order to obtain this complete arrest of blood in the sac of the aneurism, the most careful and energetic watching of the pressing instrument is necessary. You must have so deep an interest in the treatment that you will sit for a whole hour or more, enduring the most trying strain on your muscular and nervous systems, before you can hope to obtain a cure. Your eye and hand must be continually testing the condition of the aneurismal swelling; and the faintest indication of pulsation there must be considered fatal to the process of cure, and at once remedied; in fact, the tourniquet must be so placed as not to permit a single rush of blood into the aneurism. Nothing short of this will bring about a cure in a short space of time.

"We must now consider the duration of the treatment. At Newcastle, a case of aneurism of the abdominal aorta underwent the process of cure in three-quarters of an hour; and, in another case at Sunderland, under Dr. Heath's

care, consolidation was distinctly observed to occur within twenty minutes. In the Newcastle case, unsuccessful efforts had been made for several hours; and, at the end of that time, the aneurism remained unchanged. As neither increase of solidity, diminished pulsation, nor decrease in size, could be detected, I determined to make a final effort. The patient being fully under the influence of chloroform, I reapplied the tourniquet, and held it firmly and securely over the aorta so as to obliterate every trace of pulsation. By a prolonged effort, three-fourths of an hour passed without a single slip of the instrument. It was then removed, and the aneurism had ceased to pulsate. A slight movement was perceptible for some time afterwards; this being an impulse communicated from the pulsation of the aorta above it.

"In Dr. Heath's case, the pressure had been kept up irregularly for about ten hours, when the patient fainted under the chloroform. The pressure was then removed, and the pulsation and other characters of the aneurism were found to be as bad as ever. The patient was then urged to bear a final attempt without chloroform. This he did; and, to our amazement, when, at the end of twenty minutes, he declared he could bear the pressure no longer, we found the aneurism had become solid and had ceased to beat.

"Here, then, are two cases in which the actual process of cure was brought about in less than an hour."

In the discussion which followed the reading of this paper, Mr. ERNEST HART remarked: "Having given a considerable amount of attention both to the history and treatment of aneurism, I feel convinced, from a study of the cases recorded since the pressure treatment was first inaugurated in Dublin—recorded here and in every part of the world—that this method of rapid cure by complete compression is destined to be generally adopted as the mode of treatment *par excellence* for surgical aneurism. This treatment is almost as great an improvement on the slow method of compression as compression itself was upon the method of ligature. A study of the slow method—of the cases of treatment of aneurism by the tourniquet—will always show, when the history is carefully observed, that the cure has been effected suddenly. The progress goes on apparently during a great number of days; but in nearly all the cases, when the clinical history is complete, there has been a sudden cure. The patient himself is conscious of the moment at which the circulation has been completely arrested within the aneurism, and is thus informed by his own sensations of the moment at which the cure is effected."—*Brit. Med. Journ.*, Oct. 5, 1867.

36. *Compression in Aneurism.*—Professor VANZETTI, during his recent visit to Paris, communicated to the Surgical Society the particulars of three additional cases of aneurism treated by digital compression, of which he is the inventor. 1. A peasant, aged 44, entered the hospital at Treviso, in order to be treated for an aneurism of the superficial palmar arch, the size of a walnut, which had supervened upon a wound inflicted about six weeks before.

"Being able to dispose of a half-hour, I employed it in compressing the brachial artery, without being very exact as to doing so quite continuously. The half-hour had not expired, when, on examining the tumour, I found it without pulsation or souffle and already solidified. Although well satisfied with such a result, I continued the compression for fifteen minutes longer, in order to assure the solidification, and then placed the arm in a simple sling. At the end of seven days the tumour had become quite solid."

In a month's time it had become reduced one-half in size, and the cure still holds good. 2. A mason, aged 44, entered the Venice Hospital for an aneurism of the femoral artery, which formed a very visible projection, situated immediately above the passage of the artery into the ring of the adductor magnus. The patient had observed the tumour gradually forming during two months. Complete and continuous compression was exerted over the pubis by several pupils and wardsmen. In less than ten hours the cure was effected, and at the end of a month the patient resumed his occupation, and, seen a year after, had continued quite well, a hard, indolent lump, the size of a hazelnut, alone remaining of the tumour. 3. A peasant, aged 33, was admitted to the hospital at Sacle for an antero-venous aneurism at the bend of the elbow. Compression was

made simultaneously on the humeral artery and basilic vein as continuously as possible by successive assistants during seventy-four hours. After this, compression was only employed for several hours per diem, and, although much delay and some vicissitude occurred in the treatment, the compression latterly being very uncertainly applied by the patient himself, yet a complete cure resulted.—*Med. Times and Gazette*, Nov. 16, 1867.

37. *Conservative Surgery*.—Several of the men who were wounded in the New Zealand campaign seem to have brought home arms and legs which (according to the standard rules of military surgery) they ought to have left behind them. Out of six cases of gunshot fracture of the femur at various parts treated in the New Zealand war, five recovered without amputation, four of them with very useful legs; one man, wounded through both legs, died. The surgeons were moved to disregard the peremptory injunctions of military textbooks, to give the sufferers "such chance of recovery as may be obtained by amputation," by the excellent condition of the men, and the facilities for treating them in well organized field hospitals, without the necessity of premature removal. They were rewarded for their intelligent boldness by a success unprecedented in military surgery; but which, under circumstances similar to those in the New Zealand campaign, may be usefully borne in mind. Of ten cases, also, of gunshot fracture of the humerus, eight united solidly and well, and in one case only was amputation had recourse to; here the amputation was primary. Guided by the experience of the above cases, says Inspector-General Mouat, V. C., C. B., it would be fair to expect, when eighty per cent. of gunshot fractures of the humerus recover without difficulty, that amputation of the arms in such cases might be delayed for secondary operation, if, after all, found to be necessary. It may be objected to this, that the description of fire-arms used by the insurgent Maories against our men threw bullets less destructive than the bullets of rifled muskets now in ordinary use for military purposes. It is, however, a doubtful point whether such is or is not the case; doubtful how far preconceived theory of the superior penetrating power of a conical bullet over that of a round one has influenced public belief in the matter.—*Brit. Med. Journ.*, Nov. 9, 1867.

38. *Facial Neuralgia*.—Dr. F. H. THOMPSON has published (*Glasgow Med. Journ.*, Oct. 1867) some sensible remarks on this painful affection, and relates two instructive cases. "In many patients," he says, "all the symptoms of true tic are sometimes produced by the impeded irruption of the wisdom teeth, imprisoned, as they are, in their sockets of bone and prevented from being developed by the pressure of the anterior molars. In illustration of this, should the wisdom teeth not make their appearance previous to twelve or fourteen years of age, and circumstances should arise to cause the removal of one of the molars in about six months, the defaulters will make their appearance large, well formed, and sound, instead of being deformed, and carious organs which generally come only to be removed. The urgent symptoms often produced by the struggles of nature to force irruption, produce in the majority of cases something very like true tic, and in many instances where there is no appearance of even bulging of the gum over the part. The diagnosis is thus rendered very difficult, and the patient may undergo a long course of constitutional treatment for what in reality is merely the result of pressure upon the nerve and vessels passing through the foramen, by the point of the fang of the imprisoned tooth.

"A very well defined case of this description occurred in the practice of the writer, which it may be well to describe:—

"A young lady, eighteen years of age, had been complaining so far back as 1863, of occasional and almost periodical attacks of tic. At that period there was no appearance of any kind to warrant a conclusion that the cause originated in the teeth; but as the patient was strong and healthy otherwise, and the pain confined to one side, it was thought proper to extract the second molar for the purpose of giving room. For some months she was considerably relieved, but gradually all the symptoms returned in such an aggravated form that her life was a burden, and to make matters worse, all the usual palliatives used in treat-

ing this formidable complaint were found totally ineffectual. One point so far guided the diagnosis, namely, that the side of the face gradually became smaller, and the idea occurred that the whole disturbance might possibly arise from the point of the fang of the wisdom tooth, which had by this time come forward, impinging upon the vessels and nerve passing from the foramen, causing strangulation. Upon the tooth being extracted, the point was sharp and elongated, slightly twisted, which is seldom the case, and was also one of two fangs, the usual rule being that in every wisdom tooth there is only one round, blunt pointed termination. This elongated fang had a small circle of exostosed bone about two lines from the point, showing unmistakably how far the insertion had taken place, and leaving no doubt as to its being the cause of all the suffering.

"The symptoms very soon assumed a new form, and the parotid and sub-maxillary glands, which had been much enlarged, under the action of fomentation and small doses of bromide of potassium, were restored to their normal proportions. One peculiar symptom presented itself and caused some continuation of the nervous excitement, namely, the wound made by the extraction of the tooth did not heal up till after about three weeks, and the repeated application of a solution of chloride of zinc and nitrate of silver. At this time, with the exception of being highly nervous, the patient is quite convalescent, and the face is gradually assuming its normal form. This case is in itself a peculiarly interesting one, as showing the importance of local investigation which in very many cases is neglected, constitutional treatment only being adopted.

"CASE II.—Being seated opposite a gentleman at dinner some years ago in the county of Ayr, the writer observed that he was subjected to repeated and violent paroxysms of pain, more especially when mastication was attempted. This continued more or less during the evening; and upon asking him some particulars as to the origin and progress of his suffering, he stated that for ten years he had been tortured by inveterate tic which would yield to no treatment. Upon expressing an opinion that possibly the teeth might have something to do with it, an appointment was made for next day, and a consultation took place. On a strict investigation, at first nothing emerged to lead to a diagnosis favourable to the hypothesis that the teeth might be the cause, as they were all perfectly sound, indeed particularly so, but very closely packed together. On repeated sounding, especially of the wisdom teeth on the right side, a paroxysm was brought on, and this was elicited on three or four occasions consecutively. After due consideration, the tooth was extracted and there was found upon the point of the fang distinct exostosis. For some weeks the patient had a certain amount of rest, but the symptoms again recurred with all their former persistence. Seeing that some relief had been got by the treatment, it was followed up, and the second molar was extracted with beneficial effects—the period of relief being much extended—the exostosis was found upon all the fangs. For some months this went on, when again the pain appeared but very distinctly upon the side which had not been treated. The same course of practice was followed and the result was that the patient had immunity from the tic symptoms, and he has since died from other disease."

39. *Conclusion: Lesion of the Spinal Cord with Extensive Secondary Degenerations, followed by Muscular Atrophy.*—Dr. H. CHARLTON BASTIAN read before the Royal Medical and Chirurgical Society a case of much interest, not only on account of the extensive primary lesions discovered in the spinal cord (which were produced without fracture or displacement of vertebræ, from a mere concussion, not more severe than might be experienced in a railway accident), but also from the fact that extensive degenerations throughout the spinal cord, occasioned by these lesions, entirely escaped observation at a carefully conducted post-mortem examination. It is also of much interest because "secondary degenerations" following undue pressure upon, or rupture of portions of, the spinal cord, though first carefully described in 1851 by Türck, of Vienna, have hitherto, notwithstanding their importance, attracted little or no attention in this country. They afford a most valuable means of tracing the distribution of nerve-fibres in the spinal cord and higher nerve-centres, whilst an attentive study of the histological changes by which they are brought about not only

shows the close relationship existing between these degenerative processes and those which occur in the various kinds of cerebral and spinal *ramollissement*, but goes far to demonstrate the non-inflammatory nature of the latter changes, concerning which there has always been so much dispute. The man on whom these observations have been made was a labourer, twenty-six years of age, who, whilst asleep, rolled off the top of a hayrick, and fell through a distance of twenty-five feet to the ground. He was at once found to have lost all voluntary power in both lower extremities and in the right arm. After a week he was admitted into St. Mary's Hospital, when the same limbs were found to be almost completely paralyzed, though sensation in these and other parts was unaffected. The respiration was for the most part diaphragmatic. After the second month the right forearm and hand gradually became more and more rigidly flexed, and although formerly moderately stont, he gradually lost flesh, in spite of a most nourishing diet. At the time of his death, nearly six months after the accident, he had wasted almost to a skeleton. The paralysis underwent but little variation. Although no changes could be detected by the naked eye in the spinal cord when it was in its fresh condition, these could be detected with the greatest ease after it had been immersed for a week or two in a dilute solution of chromic acid, owing to the fact that the areas of degeneration which appeared on a freshly cut surface of the cord retained their natural white colour, whilst the surrounding healthy nerve-tissue had been stained in the usual manner, and exhibited a yellowish-brown tint. After making a number of sections through all parts of the cord, it was found that the original lesions produced by the violent concussion of the fall were situated in the upper part of the cervical enlargement, and consisted of three distinct ruptures through the gray matter of the right side in different directions. In one small part only of the cervical enlargement was there any loss of symmetry in the two halves of the cord, and this was produced from a shrinking and collapse of its right half at the level of the most extensive rupture. Below these original lesions areas of degeneration gradually diminishing in extent were traced throughout the dorsal region of the cord, and on as far as the commencement of the lower third of the lumbar enlargement. They occupied the inner part of each anterior column and the posterior part of each lateral column, though in this latter situation the degeneration was much more marked on the right than on the left side. Below the primary lesions the posterior columns were healthy, but above them certain ascending degenerations occupying definite areas could be traced with the greatest distinctness. These gradually diminished upwards through the medulla oblongata, and finally disappeared in the floor of the fourth ventricle and the corpora restiformia. The direction taken by the areas of degeneration affords a pathological confirmation of the views of anatomists concerning the distribution of important fasciculi of nerve-fibres in the spinal cord and medulla oblongata. The columns of degenerated tissue have been brought about by the following changes: 1. Nutritive death and subsequent degeneration of nerve-fibres throughout their whole extent beyond the seats of rupture, the degeneration passing through various stages until complete molecular disintegration of the myelene has been produced. 2. The presence of such a large quantity of nerve-matter in a state of retrograde metamorphosis leads to the so-called "atheromatous condition" of the smaller vessels, and also to the fatty degeneration and repletion of some of the connective-tissue cells between the nerve-fibres, so as to produce the well-known "granulation corpuscles;" whilst, lastly, coincidently with these changes, and even after they have ceased, there goes on a hypertrophy or overgrowth of the normal connective tissue lying between the wasted nerve-fibres. This hypertrophy may perhaps be explained in great part by the fact that much more nutritive matter is placed at the disposal of these elements, seeing that the nerve-fibres which form such a large proportion of the bulk of the part are dead, and no longer assimilate pabulum from the blood, whilst no appreciable alteration in the vascular supply has been brought about. The axis-cylinders of the nerves undergo comparatively little alteration even after long periods. The steps of this process are almost identical with those taking place in softening of the brain or spinal cord; only in the latter case the changes are brought about more quickly, and the initial stage is generally due to some

defect in the vascular supply to the part. In connection with the general muscular atrophy it is interesting to bear in mind that in addition to the disease of the spinal cord there was found in this case a decided atrophy of the great semi-lunar ganglia of the sympathetic system, and an indication also, by microscopical examination, of a fatty metamorphosis of these parts. These were the only portions of the sympathetic system examined. Many French and German pathologists now believe that progressive muscular atrophy is due to a primary disease of the sympathetic ganglia. The length of time that the patient survived is worthy of note, seeing that his respiration was said to be diaphragmatic from the first. There are anatomical reasons, however, for believing that it was not wholly so. Some observations are made concerning the symptoms presented during life—such as startings and pains in paralyzed limbs, and the condition of *contracture* which supervened after the second month in the right upper extremity; whilst, lastly, as regards the prognosis even in severe cases of secondary degeneration of the spinal cord, five or six instances are cited in which cures have been brought about.—*Med. Times and Gaz.*, Oct. 26, 1867.

40. *Dislocation of Radius and Ulna forwards*.—A case of this exceedingly rare lesion lately occurred in the clinique of M. MAISONNEUVE, and is carefully detailed. No fracture of any of the bones of the elbow-joint was present; the patient was exceedingly thin, so that everything in the position, both of the bones and the muscles, could be most accurately determined; so that this case may fairly be added as a sixth authentic one to the five already collected by Hamilton, in his great work on fractures and dislocations. The symptoms were well-marked and complete. The dislocation was reduced, but in the end a considerable portion of the thin skin sloughed; the slough had separated, and the case was progressing favourably at the date of the report.—*Edin. Med. Journ.*, Aug. 1867.

41. *Acetic Acid in Cancer*.—Dr. JAMES MORTON communicated to the Glasgow Medico-Chirurgical Society several cases of cancer treated by Dr. Broadbent's plan. (See number of this Journal for January, 1867, p. 229, *et seq.*) Dr. M., in his remarks on these cases, says: "Perhaps in not one of these cases has acetic acid, as thus applied, proved adequate to the complete cure of a single sore, or the eradication of one cancerous growth; and yet, from its application some benefits have been experienced by the sufferers. The most remarkable circumstance is the comparative freedom from pain when dilute acetic acid was used, which contains about four per cent. of real acid. Considerable pain was complained of when the glacial acid was employed, but this contains as much as eighty-four per cent. of real acid, and the pain produced by caustics has always been one of the chief objections to their use.

"In no case has there been any apparent acceleration of progress. Under a fear of such a result the idea of making punctures into malignant growths has been long discontinued, and even now can only be justified with a view to their amelioration or removal. A more or less distinct retrogression in respect to size seems to be one of the effects of the use of the acid, and a corresponding retardation of progress.

"We are not yet in a position which entitles us to say that acetic acid eradicates cancer, or to vaunt it, as, in common language, a cure for cancer. Who, that knows anything of this painful malady, does not ardently wish for such a cure? Hundreds of such have been handed from father to son, usually as family secrets, but their composition not being revealed, the profession wisely regards them with distrust. For this reason, also, the profession has been accused of apathy and indifference in regard to such matters. No accusation could be so utterly false. The profession is thirsting for such a remedy, but it must deserve the name, and must not end, as heretofore, in disappointment. The ready welcome that has been given to the recent proposal of Mr. Broadbent is a proof that professional men are open to the consideration and trial of any plausible suggestion for the cure, or even the relief of such a dire disease. So marked has this been, that here, in Glasgow, we have about as much experience of its effects and mode of action as can be found anywhere at present; and

though the results have not been all that could be desired, yet ameliorations have taken place, apparent retardations of progress, and relief or mitigation of suffering. A conviction has been forced upon me, that this remedy possesses a certain degree of power over cancerous formations. It is also possible that our present modes of application do not give the remedy fair play. I suspect we are too sparing of it, and it is not unlikely that some benefit would be derived from its hypodermic injection into the tissues adjacent to such tumours, as well as into the growths themselves. The syringe used (Wood's) is probably too microscopic, a larger instrument might be more efficient, and equally safe."

In the discussion to which the reading of this paper gave rise, Dr. ALEXANDER SIMPSON said "he had applied acetic acid in a few instances, and he would say that its effects in his hands had not by any means been so marked as in those cases detailed by Dr. Morton. In one instance it had been used subcutaneously in a case of scirrhus of the mamma. He found great difficulty in applying it in this way. On introducing the syringe it was found impossible to leave any quantity of fluid in its track in that form of cancerous degeneration. He agreed with Dr. Robertson that it was much more likely to be beneficial in the epithelial form of the malady than in the other in which the tissues are so hard and dense that the acid is scarcely able to permeate them. He had employed it in a case of epithelioma of the lower eyelid, and it had the effect of partially dissolving the tumour. This patient was, however, taken out of his hands and put under the care of a person employing a secret remedy. He might mention that in one or two cases he had seen very considerable irritation of the tumours result from the use of acetic acid. Dr. McGregor of Barnhill had also employed this remedy, but with no ultimate success, as the tumour had subsequently to be removed by operation, and the case terminated fatally. He (Dr. S.) believed that further experiments should be made with this remedy before finally pronouncing on its value. Perhaps other solvents should be used along with it. The results of the application of acetic acid injection were nearly the same as those following the use of some of the stronger escharotics. In one of Dr. Morton's cases the effects were, in fact, precisely those of a strong escharotic."

Dr. ADAMS said "there existed considerable discrepancy in the observed effects of the acid. Some state that it is a painless remedy; in his experience it had been attended with a considerable amount of pain. Others hold that it is energetic in its action, and uniformly produces a decided effect of *some* kind, while in one or two instances in which he had used it there had no appreciable effect been produced, either in increasing or diminishing the tumour. In one case of scirrhus, after some twelve careful injections, all followed by great pain, continuing for hours, there had been no other result. With regard also to the suggestion which had been made and carried into effect, of combining the acid with morphia, he had found on trial, what, indeed, he might have *à priori* expected, that the combination effected no improvement. Morphia, in order to produce its characteristic effects, must, in its ordinary mode of action, be absorbed into the blood, and thus reach the nervous system; and it did not appear a reasonable proposition that, when used in safe quantities, we should expect that it would counteract the instantaneous irritating effects of acetic acid when used locally. In these two things his experience differed from others, viz., in the pain resulting from the application of the acid, and in not, in all cases, finding it produce as well-marked action of some kind or other. Another objection to its use was the difficulty of injecting it. In a tumour of a loose tissue, no doubt it would be quite possible to force in some quantity of fluid, but to do so into a hard tumour was no easy matter. In the trials he had made with a carefully prepared syringe, he had found that, be the piston ever so closely fitting, the fluid was often forced into the upper part of the syringe, rather than through the needle. Let them, by way of illustration, fancy what would be the result if they endeavoured to force a stream of fluid through a fine tube of the diameter of a hair into the heart of a ball of India-rubber; this would give them some idea of the difficulty to which he had referred.

"Dr. A. D. ANDERSON said that every one who had practised as long as he had done, and especially those who had practised any length of time as surgeons, must have seen a great variety of such cases as Dr. Morton has detailed.

He was afraid that every one similarly circumstanced to himself must acknowledge that, in reference to cancer, he had outlived a great variety of theories, a great variety of expected cures of this dreadful malady, and also a great variety of disappointments; and he believed that this treatment would only add to the list of such disappointments. It was, nevertheless, meritorious in Dr. Morton thus to bring forward, in their present state of doubt and difficulty, cases such as he had detailed. There were only two remarks which occurred to him relative to this matter. First: every one knew that the animal life of cancerous tumours is but low, and that occasionally, without the use of any remedy, a slough takes place, and the system is able spontaneously to rid itself for a time of the disease. Secondly: It may be that in some cases acetic acid, when injected hypodermically, may assist thus a natural process, and produce the very effect to which nature was spontaneously tending. Besides this, he thought he was able to detect, during the reading of Dr. Morton's paper, that in some of his cases the excitement of the local tumour had produced a temporary excitement of the adjoining parts, and these being enlarged, the excitement had already begun to subside into the quiet state. They were all too apt to attribute effects to causes which they had themselves originated, while all the while they were really due to natural causes."

[We may add that the reports in various recent journals of cases of cancer treated by Dr. Broadbent's method, show that the results are far from realizing the hopes that were at first entertained in regard to it.—ED.]

42. *Use of Carbolic Acid in Burns.*—WM. PIRRIE, Professor of Surgery in the University of Aberdeen, extols (*Lancet*, Nov. 9, 1867) the efficacy of carbolic acid as an application to burns, and relates a case of extensive scald in a delicate child, eleven years of age, in which he applied a liniment of one part of carbolic acid, in six parts of olive oil. Common lint was wet with this, and closely applied over the whole of the scalded surface; over this a double layer of tinfoil was placed, and the whole secured with a bandage. In ten minutes the pain was relieved; in two days the bullæ seemed withering; and on the twelfth day the skin was perfectly healed without any pus being formed. "The sudden and perfect subsidence of pain," he says, "the withering of the bullæ, the complete healing of such an extent of scalded surface without the slightest suppuration in a patient of feeble constitution and greatly depressed by shock, appear to me to show that carbolic acid is well deserving of trial in burns of the first and second degree. I have seen some scalds of less extent prove fatal, and I have seen many not so unpromising at first end in suppuration and ulceration of skin, and require months to heal."

43. *Ulceration of the Duodenum after a Burn.*—Dupuytren was the first to notice congestion of the mucous membrane of the alimentary canal, and of the bloodvessels of the brain and lungs, as occurring after burns; and subsequently Mr. Curling, of London, in the 25th volume of the *Medico-Chirurgical Transactions*, 1842, recorded ten cases in which he had found ulceration of the duodenum after burns. The ulcers, which are generally perforating, are usually found about an inch from the pylorus, and may cause death by peritonitis or by hemorrhage—in the latter case the arteria pancreatica duodenalis being generally exposed where the duodenum passes in front of the head of the pancreas. Mr. Curling suggests that, the action of the skin being largely interfered with in burns, the glands of Brunner, which abound in the duodenum, may be sympathetically stimulated to increased action, which may lead to congestion and ulceration; and the fact that the ulcers are generally perforating shows that the morbid action begins in glands situated beneath the mucous membrane. As regards treatment but little can be done in the way of cure. Hyd. c. cretâ, with opium, leeches over the affected part, and bland fluid nourishment, have been recommended. In view of the possible occurrence of ulceration, it is wise in all cases of burn to order a bland, stimulating diet, and to secure regular action of the bowels.

It is interesting to note that such ulcers have been known to cicatrize after

perforating, as was observed in the case of a girl who died at the London Hospital six weeks after a burn.

Dr. D. CUTBERTSON relates (*Med. Times and Gaz.*, Sept. 28th, 1867) the following typical example of this lesion:—

G. W., aged 10, was extensively, but not deeply, burnt on the legs and arms by a hot alkaline solution on July 21, 1867, the head, face, and trunk being uninjured. The eschars were dressed with carron oil, and the lad progressed favourably till the morning of August 9, when he began to complain of tenderness over the epigastrium, and passed blood by mouth and bowels. These alarming symptoms appeared about 5 A. M., and continued till I saw him at 10 A. M., when he was ordered two grains of the acetate of lead every two hours, and a sinapism to be applied over the epigastrium. The loss of blood by mouth and bowels, denoting internal hemorrhage, continued during the day, and he died about 6 P. M. On August 13, I made, by order of the county authority, a post-mortem examination, in conjunction with Dr. Forrest, of Stirling, and Dr. Benny, of Denny. On opening the abdomen, we found in the duodenum, about an inch from the pylorus on the anterior surface, a perforating ulcer one inch long and half an inch broad, and another on the posterior surface about the size of a threepenny piece. These ulcers being sufficient to account for death, the other organs were not minutely examined; the heart and large vessels were empty, with the exception of a small clot in the right auricle. Death in this very interesting case, no doubt, was due to hemorrhage occurring in connection with the perforating ulcers of the duodenum.

44. *Tracheotomy for Croup, Impossibility of Removing the Tube even after Sixteen Months.*—M. PARIS records the following rare case:—

J. B., æt. 5½ years, had a severe attack of croup in November, 1865. For this M. Paris performed tracheotomy. Nothing was remarkable in the operation. Recovery was complete on the fourteenth day. On the thirty-second day, after many temporary removals, the canula was taken out, and the wound allowed to heal. Respiration gradually became so difficult, that in two days it had to be replaced. Other attempts were made at three and four months; still without success. The boy was taken to Paris, and seen by M. Trousseau, who stated he had met with several similar cases, one in which the canula had to be left for five years, and yet eventually a cure was completed. M. Marjolin confirmed this opinion. M. Ozanam made a laryngoscopic examination, but after twenty examinations, assisted by the little patient with good will and courage, could discover nothing, but that the larynx and vocal cords were healthy.

At the date of the report, sixteen months after the operation, the boy is healthy, but still wears the canula. During the day he closes it with a plug, which he has to take out at night. The curious point is, that though he can breathe quite well with the canula completely plugged, he cannot breathe when it is removed. Further attempts to remove it are to be made when summer has fully set in.—*Ibid.*, from *Gaz. des Hôp.*, 13th April, 1867.

45. *Results of Excisions of the Knee-Joint at King's College Hospital during the Year ending October 1, 1867.*—Mr. HENRY SMITH, in a paper read before the Medical Society of London (October 21, 1867), stated that during the last year, commencing October 1, 1866, there had been fourteen operations of excision of the knee-joint by Mr. Smith and his colleagues at King's College Hospital, in various conditions of disease. The results had been, as regards mortality, only two fatal cases out of the fourteen. Mr. Smith gave brief details of each case. The two fatal cases were mentioned first; one was a young woman, the other a little girl, who died a few days after the operation from pyæmia, the most fertile source of death. The other cases detailed were instances of the operation for more or less extensive disease of the joint combined with deformity. In one case Mr. Smith had performed the operation twice on the same patient, a boy, with an excellent result. In another instance the patient had been strongly urged by the surgeon of another hospital to undergo amputation of the thigh, but by excision a good result was produced. Two instances also of most extensive deformity combined with disease were detailed, and casts of the limb both

prior and subsequent to the operation were shown. Three of the patients on whom the operation had been done by the author were exhibited to the society. The author concluded his paper by stating that he trusted he had shown that the operation of excision was not such a fatal operation as it had been represented; and he called attention to the absence of shock or other severe suffering after it; and he wished especially to call to mind that in not one single case was the operation done for deformity alone.—*Med. Times and Gaz.*, Oct. 26, 1867.

46. *Third and Fourth Series of Fifty Cases of Ovariectomy, with Remarks on the Situation and Length of the Incision required in this Operation.* By Mr. T. SPENCER WELLS.—The first and second series of 50 cases of ovariectomy performed by the author having appeared in the 46th and 48th volumes of the *Transactions*, the third and fourth series of 50 cases are now brought before the Royal Medical and Chirurgical Society in the same tabular form, and some general observations on the 200 cases are appended. Increasing experience has been followed by diminishing mortality. Of the first 100 cases, 66 recovered and 34 died; of the second hundred, 72 recovered and 28 died. The mortality in the 200 cases was 31 per cent. *Age*: Below the age of 20, and between 40 and 50, the mortality has been less than between 20 and 40 or above 50. *Conjugal Condition*: The mortality among married women and widows has been 35.23 per cent.; among unmarried women, 26.31 per cent. *Social Condition*: Of the 200 cases, 89 were hospital and 111 private. The mortality has been nearly identical in the two classes—namely, 30.4 and 30.6. *Situation and Length of the Incision*: In 163 cases the excision did not exceed six inches in length. The mortality in these cases was 28.83 per cent. In 37 cases the incision was larger than six inches. Here the mortality was 40.54 per cent. Thus the mortality has been considerably greater in long than in short incisions, but it appears to have been of little consequence if the incision has been six, five, or four inches, or less. In all cases the *linea alba* has been selected as the site for the incision. The author quotes cases where other situations have been selected, and shows by diagrams the structures divided at each situation.—*Med. Times and Gaz.*, Oct. 26, 1867.

OPHTHALMOLOGY.

47. *The form of Amaurosis supposed to be connected with the Use of Tobacco.*—Mr. HUTCHINSON read a paper on this subject before the Royal Medical and Chirurgical Society (June 25th, 1867), in which he presented a statement, in tabular form, of all cases of primary white atrophy of the optic nerves which have come under his care during a period of three years. By the term "primary white atrophy" it is intended to exclude all cases in which there had been at any stage evidence of neuritis. The series includes thirty-seven cases. Thirty-four of the patients were men, and three were women. Of the thirty-four men thirty-one were smokers, and of these in twenty-seven no other cause could easily be conjectured; whilst in four, other causes, such as intemperance, sexual excesses, etc., were quite possible. In three cases the men had either never smoked, or had smoked so little that it seemed impossible that the use of tobacco could have had anything to do with the disease. None of the women (three in number) had been smokers. The tabular statements comprise tolerably full information as to the dietetic habits and state of health of the patients, as to the quantity of tobacco used, as to the premonitory symptoms of the amaurosis, the ophthalmoscopic appearances, and the results of treatment. The facts collected appear to the writer to justify the following conclusions: 1st. That this form of amaurosis is met with in the two sexes in the proportion of one woman to twelve men. 2d. That in the male sex it is very rarely met with excepting amongst smokers, whilst it is very rare indeed amongst children. 3d. That most of its subjects have been heavy smokers (half an ounce to an ounce a day), and that in many instances the patients themselves become aware that

the habit disagreed with them. 4th. That, as a rule, this disease is not met with in special connection with puberty, with celibacy, or with sexual excesses. 5th. That it is not usually associated with any other disease of the nervous system. 6th. That amongst the measures of treatment the prohibition of tobacco seems to rank first in importance. 7th. That the circumstantial evidence tending to connect the disease with the use of tobacco as a cause is of such a nature as to entitle the question to the serious consideration of the Profession. The writer wishes it to be clearly understood that he does not advocate any particular view, and that his wish is simply to draw attention to the clinical facts. He would add further that it is quite clear, supposing that tobacco does sometimes cause the disease, that it does so only in certain constitutions, some peculiar idiosyncrasy being required; and that it is at best only one of the causes by which this form of amaurosis may be produced.—*Med. Times and Gazette*, Sept. 28th, 1867.

48. *Ophthalmic Inflammation after Division of the 5th Nerve*.—Since Snellen and Büttner's researches we have generally believed that the ophthalmic inflammation which follows division of the 5th nerve is owing to the eye having lost its sensibility, and being therefore no longer able to protect itself against external irritants; for when means were taken to prevent the entrance of foreign bodies into the eye, the inflammation did not result. Meissner (*Henle und Pfeufer's Zeitschrift*, 3te Reihe, xxix. Heft 1, p. 96) has observed that in a rabbit in which he partially divided the ophthalmic branch of the 5th nerve the usual inflammation of the eye resulted, notwithstanding the apparently complete preservation of the sensibility. He is therefore disposed to think that the cut had injured the vasomotor nerves, or more probably the trophic nerves (that is, the nerves which immediately preside over the nutrition of the textures) of the eye. In the succeeding number of the same journal (p. 217), Schiff writes to say, that Meissner's observation entirely supports the explanation of the phenomenon advanced by him in his *Nerven Physiologie*, p. 387, and that he has observed four cases in which, after injury to the 5th nerve inside the skull in animals, the ophthalmic disturbance followed, notwithstanding the preservation of the sensibility of the eye and its appendages.—*Journ. Anat. and Phys.*, Nov. 1867.

49. *Subconjunctival Injection of a Solution of Chloride of Sodium to promote the Absorption of Corneal Opacities*.—Prof. ROHMUND (*Monats. Bl. f. Augenheilk.*, March and May, 1866) has been employing a subconjunctival injection of a solution of chloride of sodium (a scruple to an ounce of water) to promote the absorption of the diffuse corneal opacities left behind by parenchymatous inflammation. In six cases he believes that he has obtained more speedy results than any other known means would have yielded. The solution is warmed, and is very slowly injected by a syringe with a curved nozzle, through a puncture about a line and a half or two lines from the margin of the cornea. The immediate effect is to surround the cornea with an elevated ring like that of chemosis. Under a compressive bandage, the swelling disappears in five or six hours, and the resulting irritation in five or six days, after which time the cornea begins to clear from the margin. After three or four weeks the injection may be repeated; and after from three to five injections, the formation of an artificial pupil has been practicable.—*R. Lond. Oph. Hosp. Rep.*, Vol. V., No. IV.

MIDWIFERY.

50. *Danger of Administering Narcotics to Pregnant Women*.—In a paper by the late Dr. ADAMS, of Banbury, published in the *Edinburgh Med. Journ.* (Nov. 1867), the administration of opium in full doses to pregnant women is asserted to be highly dangerous to the child. Opium given in cases of threatened abortion almost invariably ends, it is stated, in the expulsion of a dead

fœtus, and that it should therefore never be given until all hopes of prolonging gestation are gone.

51. *Intra-Uterine Amputation*.—Dr. BRYCE exhibited at the meeting of the Edinburgh Obstetrical Society (Feb. 27, 1867), a case of this. The subject of it was a girl twelve years of age. There were two cicatrices on the end of the bones of the forearm, with a small projection of rudimentary finger. The amputation had taken place $2\frac{1}{2}$ inches below the elbow, and the end of both ulna and radius were distinctly felt.

Dr. KEILLER said that he had seen five such cases in Dundee and neighbourhood. In one case he saw with the late Dr. Munro, there was amputation of both lower limbs below the knees, the left arm was similar to Dr. Bryce's case, and the fingers of the right hand were webbed. This child was otherwise well-formed, and lived for some time. He (Dr. K.) had also examined a young man who had lost his left upper extremity together with the scapula by intra-uterine amputation, the cicatrix being very large and distinct.

Sir JAMES SIMPSON had seen seven cases in Edinburgh of intra-uterine amputation, all of left arm, with rudimentary fingers existing, and he remarked that it was almost universally the left arm. He calculated, some years ago, that if this deformity was as common elsewhere as in Edinburgh—as was probably the fact—some forty thousand or fifty thousand such single-handed individuals probably existed in the world. The fact of the embryo generally lying on the left side might account for the left-arm amputations. He (Sir J.) related the case of a girl who had neither arms nor legs, residing in the Highlands; also a student, and lately an A. M. of this university, without arms, who wrote his exercises with his feet.

Dr. BURN had met with two cases of intra-uterine amputation of the left arm.—*Edinburgh Med. Journ.*, June, 1867.

52. *Defects of Ordinary Sponge Tents; New Kind of Carbolyzed Sponge Tent*.—Mr. ROBERT ELLIS, in a paper read before the Obstetrical Society of London (July 3d), after adverting to the serious inconveniences and occasional danger incident to the use of the common sponge tents, proceeded to describe a new kind introduced by himself under the name of carbolyzed sponge tent. In this invention sponge is still retained as the dilating agent, but the tent is prepared by a peculiar process which renders it incapable of putrefaction, without diminishing its value as a dilator. This is accomplished by introducing into the core of the tent several threads of cotton-wick steeped in carbolic acid; and after the sponge is rolled into its proper shape, it is then immersed in cocoa butter, to which a certain quantity of glacial carbolic acid is added. The disinfectant properties of this agent completely protect the tents, and they are withdrawn in an inodorous state even after a stay of twelve or eighteen hours in the cervical canal. The shape and size of these sponge tents also differ from the ordinary kind, which are both clumsy and dangerous, as well as disgusting, in their use. These are spindle-shaped, and thus accurately adapt themselves to the fusiform character of the canal which they are intended to dilate. They require no support when *in situ*, but, by virtue of the immediate fusion of the enveloping material, they take to their work immediately, and are firmly kept in position. The author stated that he had a large experience of their utility and value; and that they could be procured ready for use, from Messrs. Bradley. Mr. Ellis also exhibited an Introducer for Sponge Tents. This instrument consists simply of a slender uterine sound tapered to a fine point, which is thrust up into the tent. A short distance from its extremity a small flat metal collar is attached, on which the sponge tent rests, so as to be firmly supported while it is pressed into its place. Mr. Ellis spoke in high terms of the great handiness of this contrivance, which may be obtained of Messrs. Meyer and Meltzer.—*Med. Times and Gaz.*, Sept. 28, 1865.

53. *Pepsine in Vomiting of Pregnancy*.—M. GROSS has used pepsine in doses of eight grains before meals, with complete relief, in a case of obstinate vomiting in pregnancy.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Death from Hydrocyanic Acid: Rapid Action of the Poison. By H. CLAY HALL, Attorney at Law, Mohawk, Herkimer County, N. Y. (Communicated in a letter to Prof. Alfred Stillé, M. D.)

The death of Robert H. Pomeroy, late cashier of the bank in this village, by suicide, afforded me a rare opportunity of witnessing the effects of hydrocyanic acid as a poison, and of fully verifying the truth of the article upon that poison in your *Medical Jurisprudence*.

Having been fortunate (or unfortunate) enough to be in company with the deceased (as appears from the evidence elicited on the coroner's inquest) within five minutes after the poison was taken, and remaining with him until his death, I proceed to give you the particulars. When I reached the barn of the deceased, he was lying extended upon the floor, unconscious. I was the *first* person who got to him, and this was within five minutes of the time he had passed into the barn. His muscles were relaxed and flaccid, with the exception of the muscles of the jaw, the jaw being firmly closed; his hands were folded across his breast, as in repose; the eyes fixed, but lifelike, the pupils in their normal condition; respiration slow, but not laboured, although deep-drawn; his pulse, when I first found him, was about 50, becoming slower and less strong to the moment of his death. There was *no* clammy perspiration perceptible. In the goblet from which he drank the poison were a few drops remaining, which, at the time I examined it (some seven or eight minutes after its contents had been taken), *gave no perceptible odour*. Leaning over him, in his most forcible expirations not the slightest odour could be perceived. His respiration became slower and slower, until intervals of over one minute intervened, and in twelve minutes from the time I reached him he breathed his last. *At the moment of dissolution the pupil of the eye dilated*, but there was not the movement of a muscle to indicate death; he simply ceased to breathe. I should mention that the veins of the neck and face were strongly congested. Shortly after death the lifelike appearance of the corpse was surprising, and thirty-six hours afterwards the eye retained its brightness.

Now for the facts as to the poison. Mr. P. went to the barn, poured into a goblet about one hundred drops of the diluted hydrocyanic acid, prepared by Squibbs, of Brooklyn, of the strength of two per cent. of pure anhydrous acid, corked the bottle and placed it upon a shelf, took off his hat and set it carefully upon the steps of the barn, then came back, drank the fatal draught, placed the glass upon the ledge where it was found by me, at least eight feet from where he lay upon the floor, must have then lain down, placed his hands across his breast, and passed into unconsciousness.

I have thus given you all the particulars as they appeared to me, a non-medical man. Dr. Casey only arrived a moment or two before Mr. P.'s death, and, equally with myself, was deceived by the non-detection of any odour of the acid.

The evidence before the coroner's inquest disclosed the fact that less than twenty minutes had elapsed between the time of the taking the acid and the

death of Mr. P.; and, after long examination, Dr. C. and myself became satisfied that the agent was either the acid used, or some of its preparations. A thorough search the next morning resulted in the discovery of the vial, with about 20 drops of the dilute acid remaining, which emitted the odour perceptibly on removing the stopper. Mr. P. was of the age of fifty-one, an excellent subject for apoplexy, and, but for extrinsic circumstances, and in the absence of the vial of poison, this case might have been taken for an apoplectic stroke.

Aphasia, with Right Hemiplegia. By W. SCOTT HILL, M. D., Augusta, Mo.

The following case occurred in my practice the past summer:—

J. D., æt. 75; shoemaker; large and muscular; addicted to the use of alcoholic liquors. First seen by me June 19, 1867, when he was in a semi-comatose state, with complete paralysis of the right side and slight of the left. When roused, attempts to speak, but only makes a few inarticulate sounds. Countenance pale; skin cool; no paralysis of the face; no ptosis; pupils natural; intolerance of light; cannot protrude the tongue; cannot swallow unless the food is placed far back in the mouth; special senses unaffected; sensation good on both sides; pulse weak and irregular, 70 per minute; incontinence of urine and feces. Seems to recognize his family. From them the following history was obtained: Has been in this condition since yesterday morning. Always healthy until eight months ago, when he occasionally complained of pain over the fissure of Sylvius, and sensations which he described as "sand running all through me." The sensation invariably commenced in the index and middle fingers of the right hand, and passed up the arm; then, commencing in the toes of the right foot, passed up the leg and over the whole body. At such times he was unable to pick up his pegs or drive them. Had power of motion in both hands, but co-ordinating power was lost. The attacks at first passed off in the course of an hour or two, but within the last two or three months have lasted much longer. Six months ago he was paraplegic, with aphasia; the paralysis most marked on the right side. Then he could articulate only "yes" and "no," without regard to the questions. Recovered the use of his limbs and speech about a month afterwards. Since then he has complained of pain in the head and pricking sensations through the body, as at first, with loss of co-ordinating power. His attack was in the night, he having retired in his usual health.

June 20. Pulse stronger, and regular; heart-sounds natural. Got out of bed and voided his urine. Recognizes his friends and family; converses with them by motions of the head; understands all that is said to him; laughed heartily at a joke. There is aphasia, with right hemiplegia. No paralysis now of left side; uses the left arm and leg without difficulty. Does not pass his urine or feces in bed. Takes things from a stand near his bed when asked.

22d. Brighter; no improvement in the hemiplegia or aphasia; cannot make any articulate sound. From this date there was little improvement. He regained, in a slight degree, motion in the foot, but none in the arm. He had several attacks of diarrhœa, during which he would lie in a comatose state, passing his urine and feces involuntarily, the feces very dark and extremely offensive. His bowels were not regular after his last attack. He died August 9. Being out of the city, no post-mortem was made.

Case of Triplets complicated with Ascites. By WM. C. CROOKS, M.D., of Philadelphia.

I acted as accoucheur in the following case, though the woman was the patient of Dr. Allen, of this city, and had been under his care for several weeks preceding. A plural birth, supposed to be twins, had been diagnosed, though difficult to make out from the fact that a considerable quantity of dropsical fluid was contained in the abdominal cavity, which could for a time be distinctly detected in the lower part of the abdomen when the patient was in the upright or semi-upright position. This was accompanied with much swelling of a dropsical character in the lower extremities. The patient also suffered greatly from sickness of the stomach during the last two months of her gestation; and also, at times, from obstinate constipation, and a troublesome and persistivè suppression of urine, which at such times contained traces of albumen. These symptoms were much relieved by appropriate treatment. She fell in labour on the 20th of June, at about the eighth month of her gestation. The children were contained in separate sacs, the membranes in each case being unusually tough, and required artificial interference to rupture them. There was at least a quart of amniotic liquor contained in each sac; this, together with the ascites and the three children, accounts for her enormous distension; she suffered great pain.

The first child, a male, presented in the third position of vertex, and was born without much delay or difficulty after the membranes were ruptured. The second child, a female, was a foot-presentation, sacrum of child toward the pubes of the mother. The third, a male, and also a footling presentation, the sacrum of the child directly posterior toward the sacrum of the mother. This position I changed by bringing the sacrum of the child toward the anterior inclined planes of the pelvis and delivered it also without much difficulty. The time between the births of each child was just fifteen minutes by actual observation of a clock in the room. After each birth, the uterine contractions were renewed in ten minutes, the children being small, pelvis ample, and the woman having previously borne seven children (this being her eighth pregnancy); the actual period of labour for the last two children, was only five minutes each, one being born with but two, and the other with but three uterine contractions. The first two children weighed a fraction less than 7 lbs. each, and the last a fraction less than 6 lbs. Total weight, $19\frac{3}{4}$ lbs.

The placenta was single, and oval in shape; no visible line of demarcation could be found in the fleshy part of it, while the three separate umbilical cords, and the three separate sacs marked it in that respect distinctly. Its delivery was attended with an hourglass contraction and a frightful hemorrhage, which was with difficulty stopped by the introduction of ice and styptics into the uterus, and the administration of ergot. This unfortunate hemorrhage reduced the patient to the very verge of death, and her recovery was slow and tedious. One child died in forty-eight hours, and the other children within twelve hours of each other when two weeks old. The mother has had no secretion of milk following several of her previous confinements, and being unable to procure a wet nurse, it was impossible to nourish these delicate babes by an artificial regimen.

Labour during Sleep. By M. WENDELL CASE, M.D., Chicago, Ill.

On the evening of December 16, 1860, I was summoned to visit Mrs. B., residing in the town of Hopedale, six miles from my residence at that

time. She was a healthy, well-developed brunette; aged about 21; a native of the South of France; had been married about ten months. Her husband informed me that his wife had been feeling badly all day, and was near the period for her confinement, but rather attributed her illness to over-fatigue on the day previous. On my arrival I found Mrs. B. very comfortable; she had had some quite severe pains in the lumbar region, and slight nausea. On examination, found os uteri dilated to three-fourths the size of a half dollar.

At 10 o'clock, having waited an hour for a return of labour-pains, I suggested that we should retire to rest and be called when our services should be required. About 4 o'clock in the morning, Mr. B. came to me in a great fright, exclaiming, "*Monsieur le Médecin, il y a quelquechose entre les jambes de ma femme!*" Imagine my surprise to find that the head of the child had been wholly expelled during the profound sleep of the mother. In a moment, the body was delivered, and in less than twenty minutes the secundines had passed off and the uterus contracted with scarcely any pain. She said she had dreamed something was the matter with her, and awoke with a fright, probably the instant the head was expelled.

Twice since she has been confined, I am informed, and with the usual amount of labour-pains.

Case of Complete Transposition of the Abdominal and Thoracic Viscera. By N. HICKMAN, M. D.

The subject, a well-developed male, aged about fifty years, came under my observation while demonstrating Anatomy in the Anatomical Rooms of the University of Pennsylvania.

In the thorax, the *lungs* were reversed, the left and larger consisting of three lobes, while the right lung had but two. The *heart* extended obliquely from left to right, the apex pointing to the intercostal space between the fifth and sixth ribs of the *right side*. It was bound down to the pericardium and diaphragm by three fibrous bands, probably the remains of an old pericarditis.

The anatomical characters depending upon function were also reversed, the right side being thicker in its muscular walls, the ventricle giving off the aorta and the auricle receiving the pulmonary veins; while the walls of the left cavities were the thinner, the auricle receiving the venæ cavæ and the ventricle giving off the pulmonary artery. Judging from the universality of these transpositions, it is inferred that the valves were also transposed, the mitral separating the right auricle and ventricle; while the tricuspid separates the left ventricle and auricle. We are unable to state absolutely that this is the case, because it is thought that to lay open the heart will impair the value of the specimen as a preparation.

The *aorta*, after its origin from the right ventricle, arches first to the left and then to the right, and descends on the right side of the vertebræ to its bifurcation at the top of the fourth lumbar vertebra. The coronary arteries arise as usual from the commencement of the aorta. The first branch given off from the arch is the *innominate*, which subsequently divides into the left common carotid and subclavian arteries. The next one, the right common carotid and subclavian, which it will be seen is the reverse of the usual distributions. The remaining branches of the aorta are as usual, except the *cœliac axis*, which is wanting, its place being sup-

plied in part by the superior mesenteric which gives off the hepatic and gastric, while the splenic arises directly from the aorta.

The ascending cava is on the left of the aorta, necessitating the right common iliac vein to pass under the left common iliac artery, and the left common iliac vein passes under the artery to join the cava. The cava, as it ascends, receives its usual branches. The *right renal vein* receiving the *right spermatic vein* crosses the aorta and is therefore much longer than the left. The *left spermatic vein* empties into the vena cava. The descending cava is formed by the union of the right transverse vein (resulting from the union of the right internal jugular and subclavian veins) and the left innominate vein, after which it passes downward to terminate in the left auricle.

In the *abdomen*, the viscera are also reversed. The *liver* is situated in the left hypochondriac region, the larger lobe being under the ribs, while the smaller extends into the epigastrium. The organ is in other respects normal.

The *spleen* is situated deeply in the right hypochondriac region. The stomach occupies its usual space, but has its larger or cardiac end to the right and the pyloric in the left hypochondriac region, causing the small intestines to pursue an opposite course and to join the large intestine (cæcum) in the left iliac region. The large intestine, also, is reversed in its relations, and terminates in the rectum at the *right sacro-iliac symphysis*.

The *pancreas* extends from the spleen in the *right hypochondrium* to the duodenum, beginning in the *left*.

The *pneumogastric nerve* on the right side descends in front of the arch of the aorta into the posterior mediastinum in front of the œsophagus and stomach, thus taking the course usually followed by the left. The left nerve passes posterior to the œsophagus and stomach.

The specimen is now being prepared by the aid of Messrs. L. Nancrede, T. C. Clark, and E. P. Bernardi, students of the University of Pennsylvania, and, when complete, will be presented to the Wistar and Horner Museum of that institution, by the gentlemen to whom the subject belonged, Messrs. J. J. Brown, E. P. Bernardi, J. K. F. Bell, R. J. Clark, T. R. Franklin, and A. B. Stoops.

Note from Dr. H. O. Hitchcock, of Kalamazoo, Michigan.

On the Alkaline Solution of Propolis.—ISAAC HAYS, M. D. *Dear Sir:* In the October number of the Journal, page 571, you have made a little extract from an article of mine in the *Chicago Medical Journal*. I would thank you to correct a little error which the printer made in the *Chicago Journal*.

The formula for the alkaline solution of the propolis should be as follows, viz.: R.—Propolis ʒij ad ʒiv; Liq. potassæ ʒj. Solve, et adde, Syrupi simp., aq. puræ, āā ʒij. Dose one-half to one teaspoonful after each passage of the bowels.

The only source from which it is available to procure propolis, is, I believe, in old beehives, where the bees collect it for use in their architecture. Its identity will not be doubtful from the description.

DOMESTIC SUMMARY.

Experiments with Ligatures.—Dr. B. HOWARD exhibited to the New York Pathological Society (Oct. 23, 1867), three specimens of ligature of the carotid arteries in the sheep, by different ligatures and in different manners, and made, in connection therewith, the following remarks:—

A patient came to me with an axillary aneurism, and as immediate compression was, under the circumstances, impracticable, I thought of no other method of treatment save that of ligation of the subclavian. The condition of the artery, I apprehended, would not allow of ligation in the ordinary manner, by the silk ligature, and I thought if ligation were to be performed at all, it must be by the metallic ligature. We know that it is as generally accepted as taught, that the metallic ligature takes up its residence quietly wherever it is placed. Before proceeding, however, to perform such an operation, I thought it would be better to confirm these teachings first by experiment.

I accordingly obtained a very strong sheep, and applied a silver-wire ligature to the common carotid, and fastened it by twisting it very tightly. Fifty-six days afterwards, I cut down through the cicatrix, and found that the collateral circulation which was established was very complete, and that the capillary circulation was not great; so that by making the section—which was, by the by, a vivisection—there was very little hemorrhage. On coming down to the point of ligation, I was very much astonished to find what appeared to be a good-sized aneurism. I concluded, although I could detect no pulsation, that it was a dissecting aneurism; the ligature having perhaps caused ulceration of the middle and internal coats of the vessel. I removed it, and on section I was rather surprised to find what you here see—that this sac was an abscess full of inspissated pus, the pus having been in larger quantity than when I removed the tumour, as is manifested by the plications of the pyogenic membrane. It occupied a space of about four lines on either side of ligature, beyond which points the plugs were intact for about seven lines. In the centre of this abscess lay this ligature, with the middle and lining coats of the artery completely sloughed away and detached.

Here is another specimen removed from a pretty strong sheep. I applied a leaden ligature this time, and had it rather large, in order to avoid its cutting through. I tied it tightly, and, apprehensive that the sharp twisted ends might possibly produce some mechanical irritation, I sought to avoid it by securing the ends with perforated shot, they then being cut off smoothly. Twenty-six days afterwards, I cut down through the cicatrix, when instantly a pellet of pus appeared in the incision, as if propelled from behind. I made another incision, when the ligature and shot immediately followed it. As I proceeded towards the original site of the ligation, the hemorrhage was exceedingly great—almost equal to that produced by dissecting through erectile tissue. I ligated above and below, and then removed this portion with the abscess which I present. There had been a good deal of inflammation around the artery, and there was considerable fibrinous material effused in the neighbourhood. When preparing this specimen, I came to a point which I thought was no part of the tumour, but was misled; for, by continued clipping with scissors, I came down to a part which was exceedingly dense, and, cutting that, a little opening was revealed, through which a piece of whalebone has been passed, and through which the ligature had ulcerated its way to the surface. On making a longitudinal section of this artery, I found it perfectly occluded, and well plugged on its cardiac and distal aspect. Between the proximal end of the distal plug and the distal end of the cardiac plug, was apparently an abscess containing about a drachm and a half of sero-purulent fluid; otherwise, the clot was perfect. The points of interest in this specimen are the great amount of irritation and inflammatory action that occurred about this metallic ligature, and that through the consequent excessive deposit of fibrin, the ligature, shot and all, had worked its way, arriving nearly at the cicatrix of the ligament.

I imagined that perhaps the kind of ligature was not the only consideration

which should claim attention, and I obtained another sheep, to the common carotid of which I applied a silver-wire ligature, tying it incompletely after the manner of the silk ligature; but I was very careful to tie it loosely. I tied it tight enough only to diminish the canal of the artery to a considerable degree, but avoided, as nearly as I could judge, a complete closure.

On cutting down afterwards upon the cicatrix, I could scarcely discover whereabouts the ligature had been applied, so small was the amount of irritation it had produced. The plug in this case was more perfect than in either of the preceding cases. There was no abscess, the fibrinous deposit being just sufficient to cover the ligature. There was, on making the section, just a drop of something in which my friend Dr. Rogers, who has examined several specimens for me, thought he found one or two globules of a doubtful nature. At all events, the inflammatory action was exceedingly slight, only enough to be serviceable. The result, so far as occlusion, extent, and firmness of the plug are concerned, is very much better than in either of the other cases.

I am very unwilling, at present, to make any deductions from these experiments. They form only a small part of a series which I have in progress, each with a different ligature applied in a different manner. So far as these experiments go, other things being equal, it seems to be demonstrated, 1st, *that the metallic ligature does not always reside quietly where it is placed.* The last experiment demonstrates, 2d, *that it is not always necessary for complete occlusion of the artery to tie the ligature so tightly as to divide the middle and internal coats.* 3d. The last experiment is very suggestive, that a silver-wire ligature applied so loosely as to produce no lesion of the artery, nor even to completely arrest the circulation, may suffice for the cure of aneurism, when an ordinary ligature would be rendered inexpedient by the condition of the arterial coats.—*Medical Record*, Dec. 2, 1867.

Observations and Experiments on Living Organisms in Heated Water.—Dr. JEFFRIES WYMAN gave, in the *Am. Journ. of Science and Arts* for July, 1862, an account of some very interesting experiments on the formation of infusoria in boiled solutions of organic matter, which showed that such solutions, exposed only to air which had passed through tubes heated to a redness, became the seat of infusorial life. (See No. of this Journal for October, 1862, p. 567.)

This same eminent physiologist and most reliable observer has been further pursuing his investigations, and has published an account of them in our esteemed contemporary, the *American Journal of Science and Arts* for September last.

Dr. W. remarks: "Abundant proof has been brought forward to show that the spores or germs of infusoria exist in the air in quantities amply sufficient to account for the presence of living organisms in solutions freely exposed.

"There can therefore be no certainty of the existence of spontaneous generation in a given solution, until it can be shown that this has been freed of all living organisms which it contained at the beginning of the experiment, and kept free of all such from without during the progress of it. On the other hand, this kind of generation becomes probable, whenever it is made certain that infusoria do appear in solutions, in which the conditions just mentioned have been complied with. We say probable, because their appearance under such circumstances would not amount to a proof. The absolute proof of spontaneous generation must come from the formation of living organisms out of *inorganic* matter. If infusoria are generated in solutions of organic matter, independently of spores or germs, the question may be fairly raised whether we do not begin the experiment with materials in which life already exists, even though this material is not in the form of distinct organisms.

"The issue between the advocates and the opponents of this doctrine clearly turns on the extent to which it can be proved that living beings resist the action of water at a high temperature, or on what Pouchet calls 'vital resistance,' for in nearly all the observations hitherto made, heated water has been the agent for the destruction of infusorial life preliminary to the beginning of an experiment.

"The observations and experiments contained in this communication have

not been brought together either for sustaining or refuting the doctrine just referred to, but partly with the view of testing the accuracy of the experiments formerly made, and chiefly for the purpose of determining how far the life of certain kinds of low organisms is either sustained or destroyed in water which has been raised to a high temperature, a result which must be reached before spontaneous generation can be either asserted or denied. The evidence which will be adduced is derived from the following sources:—

“1. From the phenomena of hot springs.

“2. From the appearance or non-appearance of infusoria in solutions boiled for different periods of time, and exposed only to pure air.

“3. From the observed action of heat on the living organisms which the solution experimented with was known to contain.”

The following are the conclusions which Dr. W. thinks justified from the observations and experiments recorded in his paper:—

“1. In thermal waters plants belonging to the lower kinds of Algæ live in water the temperature of which, in some instances, rises as high as 208° F.

“2. Solutions of organic matter boiled for twenty-five minutes, and exposed only to air which had passed through iron tubes heated to redness, became the seat of infusorial life.

“3. Similar solutions contained in flasks hermetically sealed, and then immersed in boiling water for periods varying from a few minutes to four hours, also became the seat of infusorial life. The infusoria were chiefly Vibrios, Bacteriums, and Monads.

“4. No ciliated infusoria, unless Monads are such, appeared in the experiments referred to in the above conclusions.

“5. No infusoria of any kind appeared if the boiling was prolonged beyond a period of five hours.

“6. Infusoria having the faculty of locomotion lost this when exposed in water to a temperature of from 120° to 134° F.

“If Vibrios, Bacteriums, and Monads are added to a clear and limpid organic solution, this becomes turbid from their multiplication in from one to two days. If, however, they have been previously boiled, the solution does not become turbid, until from one to two days later, and in some of the experiments not sooner than does the same solution to which no infusoria have been added.”

Hyposulphite of Soda in Malarial Diseases.—In our No. for April, 1866, p. 388, a case is related by Dr. T. Leavitt, of obstinate remittent fever which had resisted the use of sulphate of quinia, and was cured by the hyposulphite of soda. Dr. N. L. NORTH (*N. Y. Med. Journ.*, March, 1867) and Dr. W. H. BAXTER also bear testimony to the efficacy of this remedy, and Dr. S. E. HAMPTON states (*Cincinnati Lancet and Observer*, Nov. 1867) that of sixty-six cases of malarious fevers in which he has used that remedy, it has failed in one only. Several of these cases he has recorded in the journal last referred to.

Dr. W. E. TURNER, of Leavenworth, states (*Leavenworth Medical Herald*, Nov. 1867) that while in practice in Southern Illinois, where periodical fevers were very prevalent, he used the hyposulphite and sulphite of soda in over 125 cases with almost unvarying success and with better after results than followed the use of quinia. He gave the salts in doses of from 15 to 20 grains every two hours, for an adult.

Liquor Ferri Persulphatis as an Anti-periodic.—Dr. G. H. LENOIR states (*Southern Journ. Med. Sc.*, Nov. 1867) that he has tried the liquor ferri persulphatis in several cases of intermittent fever, where quinia had failed, and even produced unpleasant effects.

“Immediately after the administration of the iron the chills ceased, and in but one case was there a recurrence of the malady, and in that the patient had but one chill, after which there was no symptom of a recurrence.”

He gave the solution in doses of from eight to fifteen drops every four or six hours, generally preceded by a full dose of pil. cathart. comp.

Treatment of Cancer by Injection of Acetic Acid.—Dr. F. D. LENTE, of Cold Spring, N. Y., reports (*New York Med. Journ.*, Dec. 1867) two cases treated

by this method. The first was a case of scirrhus cancer of the mammary gland. The pain and inflammation following each injection was severe, and as no prospect of success was afforded, and the patient was worn out by her sufferings, the tumour was extirpated. The second case was one of epithelioma of prepuce and glans penis. The progress of the disease was evidently not arrested by the injection of the acid, and in this case the patient was advised to submit to amputation.

Coffee in Delirium Tremens.—Dr. WM. R. WHITEHEAD states (*Medical Record*, Oct. 1, 1867), that in a case of delirium tremens, he observed a peculiarly marked tranquillizing effect caused by strong coffee, and which produced prolonged and refreshing sleep, after the usual remedies had proved ineffectual.

Puerperal Convulsions Successfully Treated by Ice to the Spine.—Dr. HENRY GIBBONS, JR., reports (*Pacific Med. and Surg. Journ.*, September, 1867), a case of puerperal convulsions treated by an ice-bag applied over the lower dorsal and upper lumbar vertebræ. The patient recovered.

Summary View of Thirty Cases of Aneurism of the Aorta.—Dr. A. G. SOULE gives (*Pacific Medical and Surgical Journal*, June, 1867) the statistics of thirty cases of aneurism of the aorta, occurring within two years and a half in the medical wards of the City and County Hospital of San Francisco. "In one-half of these cases (15) the arch of the aorta was the principal seat of the aneurism. In one-third (10) the descending thoracic portion was alone implicated, and in one-sixth (5) the abdominal aorta, at or near the celiac axis, was the seat of the aneurism, the tumour sometimes extending above the diaphragm."

"The generality of these persons supposed themselves suffering from rheumatism, neuralgia, lung or heart disease; but by close physical examination I diagnosed nearly all of the aneurisms before death."

The subjects of these cases were engaged in laborious occupations, and were exposed to inclement weather. The ages of the subjects varied from twenty-seven to sixty-two years, most of them being over forty.

"Rheumatism or venereal disease had affected the most of them at some period of their lives. They were usually intemperate and improvident. Only one of the number claimed to be married and to have a family—all were without settled home or habitation, migratory in their habits, as the table of nativities indicates."

"Twenty-one of these aneurisms ruptured and nine did not. Fourteen had hemorrhage externally and seven internally. Eighteen died immediately upon the rupturing of the aneurism, and three lived a few days after the rupture."

"In those cases where death occurred without rupture, there were usually more complications, as with anasarca, cardiac and lung diseases, erosion of the vertebral column, etc., death usually coming on very slowly and attended with much pain."

"Atheroma of the aorta was found in a very large proportion of the cases; valvular disease of the heart and hypertrophy in but few."

"The aneurismal tumours varied in size from a hen's egg to the head of an infant, and were usually filled more or less with consecutive fibrinous layers."

Direct Action of Hydrocyanic Acid upon the Medulla Oblongata.—Prof. JOSEPH JONES, of the University of Nashville, relates (*The Medical Record*, Dec. 16, 1867) a number of experiments performed on alligators in 1862, with a view of ascertaining the *modus operandi* of hydrocyanic acid. From these experiments Dr. Jones concludes "*that prussic acid acts primarily, directly, and chiefly upon the medulla oblongata and spinal cord; and that its ability to produce sudden death is dependent upon its action upon the medulla oblongata.*"

"Derangements in the relations of the medulla oblongata and spinal cord to the muscular system generally, and especially to the respiratory system, are the first phenomena manifested in the action of prussic acid."

"When absorbed from a raw surface, or from the stomach and bowels, these phenomena are manifested, as well as upon the direct application of the poison

to the medulla oblongata, but more slowly. In warm-blooded animals death takes place almost immediately after the administration or inhalation of the poison; still, when taken by the mouth, a sufficient time always elapses for the absorption of the poison and its distribution to the great nervous centres. As soon as the poison in the blood reaches the medulla oblongata and spinal cord, convulsive motions are excited, and if the impression be sufficiently intense there is an immediate arrest of the action of the ganglionic cells presiding over the respiratory process, and immediate death follows.

"In the young alligator the cartilaginous walls of the cerebro-spinal nervous system can readily be removed by the knife, and we are thus enabled to apply the poison to successive portions of the nervous system, and thus demonstrate the immediate and direct action of the poison upon that portion of the cerebro-spinal nervous system which presides over respiration and the reflex actions.

"Prussic acid, as we have satisfactorily demonstrated by numerous experiments, acts also upon the blood, and upon the muscular fibres and the sympathetic nervous system; but, as has been conclusively demonstrated by the experiments just recorded, the most marked phenomena, and those disturbances of the respiration which induce death, are due to the direct action of the poison upon the medulla oblongata."

Yellow Fever in New Orleans in 1867.—The following statement, which we take from the *New Orleans Med. and Surg. Journ.* for Nov. 1867, furnishes us with the characteristics of the epidemic which has prevailed in New Orleans the past season:—

"Each manifestation of an epidemic disease presents individual traits, to distinguish it from others of the same malady; and the yellow fever of 1867 will be long remembered for its well-marked peculiarities. We have before spoken of the early appearance of sporadic cases, and its late establishment in an epidemic form. The mildness of the type generally prevalent here was alluded to, as well as its inclusion of negroes among its subjects. To a confirmation of these traits it may now be added, that this epidemic of the fever is the most sweeping one ever known in the history of our city. No class of the population can this year claim or expect exemption from its ravages. It was generally supposed that natives of the city enjoyed an immunity, and that those born and raised in the vicinity possessed it in proportion to their contiguity. It was also believed that one attack was a fair guarantee against all future danger from the fever. This year it has violated these precedents most incontestably, and in numerous instances. Infants at the breast have appeared to be almost as susceptible to the infection as any other people, though most have experienced very light attacks; but bad cases have not been wanting, and, in the writer's practice lately, occurred a case of black vomit in an infant only one month old.

"Secondary attacks, formerly considered rare exceptions, have this year been found numerous and well attested. Even some who were known to have the fever in 1853, have again had well-marked attacks. It is to be remarked, however, that these secondary cases have been, almost without exception, tractable ones, and have terminated favourably. The absence of large numbers from the city during the war is supposed to have cost them the immunity previously acquired, and rendered them measurably susceptible again to the infection.

"We are not aware that any new light has been thrown upon the vexed questions of contagion and portability, nor that its introduction from abroad has been established with any degree of credibility. The quarantine has been maintained throughout the epidemic, at the mouth of the river, and it is certain that, under the present system, it has proved inoperative to debar the disease. Whether any different system would be more efficacious is yet problematical, and it does not seem probable that the question will soon be decided."

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It would be a work of supererogation to bestow a word of praise upon this Lexicon. We can only wonder at the labor expended, for whenever we refer to its pages for information we are seldom disappointed in finding all we desire, whether it be in accentuation, etymology, or definition of terms.—*New York Medical Journal*, Nov. 1865.

It would be mere waste of words in us to express our admiration of a work which is so universally and deservedly appreciated. The most admirable work of its kind in the English language. As a book of reference it is invaluable to the medical practitioner, and in every instance that we have turned over its pages for information we have been charmed by the clearness of language and the accuracy of detail with which each abounds. We can most cordially and confidently commend it to our readers.—*Glasgow Med. Journal*, Jan. 1866.

A work to which there is no equal in the English language.—*Edinburgh Med. Journal*.

It is something more than a dictionary, and something less than an encyclopædia. This edition of the well-known work is a great improvement on its predecessors. The book is one of the very few of which it may be said with truth that every medical man should possess it.—*London Medical Times*, Aug. 26, 1865.

Few works of the class exhibit a grander monument of patient research and of scientific lore. The extent of the sale of this lexicon is sufficient to testify to its usefulness, and to the great service conferred by Dr. Robley Dunglison on the profes-

sion, and indeed on others, by its issue.—*London Lancet*, May 13, 1865.

The old edition, which is now superseded by the new, has been universally looked upon by the medical profession as a work of immense research and great value. The new has increased usefulness; for medicine, in all its branches, has been making such progress that many new terms and subjects have recently been introduced: all of which may be found fully defined in the present edition. We know of no other dictionary in the English language that can bear a comparison with it in point of completeness of subjects and accuracy of statement.—*N. Y. Druggists' Circular*, 1865.

For many years Dunglison's Dictionary has been the standard book of reference with most practitioners in this country, and we can certainly commend this work to the renewed confidence and regard of our readers.—*Cincinnati Lancet*, April, 1865.

It is undoubtedly the most complete and useful medical dictionary hitherto published in this country.—*Chicago Med. Examiner*, Feb. 1865.

What we take to be decidedly the best medical dictionary in the English language. The present edition is brought fully up to the advanced state of science. For many a long year "Dunglison" has been at our elbow, a constant companion and friend, and we greet him in his replenished and improved form with especial satisfaction.—*Pacific Med. and Surg. Journal*, June 27, 1865.

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WE must express our acknowledgments to our numerous contributors for the valuable papers with which they keep us constantly supplied, and ask the indulgence of those whose articles have been postponed from want of room. In the selection of articles, we regard it to be our duty to give precedence to those of most practical value.

All articles intended for the *Original Department* of this Journal must be communicated to it *exclusively*. As original articles are accepted only on this condition, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of May.

Compensation is allowed for original articles, and reviews, *except* when illustrations or extra copies are required. A *limited* number of extra copies will be furnished to authors *if the request for them be made when the communication is sent*.

The following works have been received:—

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Volume the Fiftieth. London: Longmans, Green & Co., 1867.

Guy's Hospital Reports. Edited by C. HILTON FAGGE, M. D., and ARTHUR E. DURHAM. Third Series. Vol. XIII. London: John Churchill & Sons, 1868.

On the Pathology and Treatment of Albuminuria. By WILLIAM H. DICKINSON, M. D. Cantab., F. R. C. P., Assistant Physician to St. George's Hospital and to the Hospital for Sick Children. London: Longmans, Green & Co., 1868.

Stone in the Bladder: with Special Reference to its Prevention, Early Symptoms, and Treatment by Lithotrity. By WALTER J. COULSON, F. R. C. S., etc. etc. London: John Churchill & Sons, 1868.

The Diseases of the Prostate, their Pathology and Treatment; comprising the Jacksonian Prize Essay for the year 1860. By Sir HENRY THOMPSON, F. R. C. S., Surgeon Extraordinary to H. M. the King of the Belgians, Surgeon and Prof. of Clinical Surgery to Univ. Coll. Hosp., etc. Third edition. London: John Churchill & Sons, 1868.

A Third and Fourth Series of Fifty Cases of Ovariectomy, with remarks on the situation and length of the incision required in this operation. By T. SPENCER WELLS, F. R. C. S., Surgeon in Ordinary to her Majesty's Household, Surgeon to the Samaritan Hospital, etc. London, 1867. (From the Author.)

A Case in which Ovariectomy was twice successfully performed on the same Patient. By T. SPENCER WELLS, F. R. C. S., etc. London, 1867. (From the Author.)

Vindication of the Present State of Aural Surgery. By a Member of the New Sydenham Society. London: John Churchill & Sons, 1864.

Études sur les Médications Arsenicale et Antimoniale, et sur les Maladies du Cœur. Par le Docteur LUCIEN PAPILLAUD (Henri Almès) Chevalier de l'Ordre Royal du Christ de Portugal, etc. etc. Paris: J. B. Baillié et Fils, 1867.

Die optischen Fehler des Auges mit ihren Folgen, Asthenopie und Strabismus. Von JOHN ZACHARIAH LAURENCE, F. R. C. S., etc. Aus dem Englischen ins Deutsche übersetzt und mit erweiternden Zusätzen versehen von Dr. AUGUST KORST, praktischer Arzt zu Kreuznach. Kreuznach, 1868. (From the Translator.)

A Practical Treatise on the Diseases of Women. By T. GAILLARD THOMAS, M. D., Professor of Obstetrics and Diseases of Women and Children in the College of Physicians and Surgeons, New York; Physician to Bellevue Hospital, etc. etc. With two hundred and nineteen illustrations. Philadelphia: Henry C. Lea, 1868.

Atlas of Venereal Diseases. By A. CULLERIER, Surgeon to the Hôpital du Midi, Member of Surgical Society of Paris, Chevalier of Légion d'Honneur, etc. Translated from the French, with Notes and Additions, by FREEMAN J. BUMSTEAD, M. D., Prof. of Venereal Diseases in the Coll. of Phys. and Surgeons, New York, etc. With about 150 beautifully coloured figures, on 26 plates. Part I. Philadelphia: Henry C. Lea, 1868.

Pennsylvania Hospital Reports. Vol. I. 1868. Phila.: Lindsay & Blakiston.

Obstetric Clinic: a Practical Contribution to the Study of Obstetrics, and the Dis-

eases of Women and Children. By GEORGE T. ELLIOT, Jr., A. M., M. D., Professor of Obstetrics and Diseases of Women and Children in Bellevue Hospital Med. College, etc. etc. New York: D. Appleton & Co., 1868.

Plastics: a new Classification and a brief Exposition of Plastic Surgery. By DAVID PRINCE, M. D. Philadelphia: Lindsay & Blakiston, 1868.

Annual Abstract of Therapeutics, Materia Medica, Pharmacy, and Toxicology, for 1867; followed by an original memoir on Gout, Gravel, and Urinary Calculi, by A. BOUCHARDAT, Prof. of Hygiene to Faculty of Medicine, Paris; Member of the Imperial Academy of Medicine. Translated and edited by M. J. DE ROSSET, M. D., Adjunct to Prof. of Chemistry, University of Maryland, etc. Phila.: Lindsay & Blakiston, 1868.

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THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR APRIL 1868.

ART. I.—*On Amputation at the Knee-joint, and at the Knee.* By JOHN H. BRINTON, M. D., one of the Surgeons to St. Joseph's Hospital.

THE propriety of disarticulation at the knee-joint is still a mooted point in the practice of American Surgery. By a majority of surgeons, the operation is, perhaps, regarded with suspicion. Many who in a given case of injury or disease would unhesitatingly amputate through the thigh, would in a similar case shrink from the performance of amputation at the knee-joint. The question naturally arises as to the cause of this reluctance. To a certain extent, it is probably owing to the existing dread of operative interference with so large a joint, and possibly, also, to a lack of information regarding the healing process of flaps formed upon articular surfaces. But more especially, we think, is the unpopularity of amputation at the knee-joint to be traced to a feeling of uncertainty as to the usefulness of the resulting stump, and to a strong misgiving regarding the immediate issue of the operation.

The surgeon who is called upon to select his point of amputation in the case of a mutilated or diseased leg, instinctively asks himself, whether amputation at the knee-joint affords his patient a better chance of recovery than amputation in the continuity of the thigh—and if it does, what will be the serviceableness of the resulting stump. Questions such as these cannot be answered by reference to purely theoretical opinions, but must be met by the production of authentic and carefully observed cases.

The object of the writer in the present paper is to submit the report of seven cases, in which he has performed amputation at the knee-joint, with known results. In several other instances occurring in military practice, he has performed the same disarticulation, but as the termination of these

latter cases is unknown to him, he has not included them in the accompanying tables. In addition, he presents a series of cases, previously unreported, which have happened chiefly in the practice of surgeons in Philadelphia and its vicinity. A brief reference is also made to those well-authenticated instances of knee amputations, which have from time to time been reported in our own and in foreign journals. From the aggregate of cases thus obtained, an attempt has been made to deduce the mortality rate of the operation in question.

In a supplementary table will be found the reference to many European cases, most of which have been handed down from author to author. The difficulty of obtaining access to the original reports, their meagre and often inaccurate details, and the unsatisfactory nature of second-hand quotations, unfit these latter cases for the analytical purposes of this paper. Indeed it is very much to be doubted whether they possess any value other than that of a purely historical character.

Before attempting to examine into the merits of disarticulation of the knee, it may here be well to allude briefly to the more important papers which have from time to time appeared, bearing upon amputation at the knee-joint—and in this connection it must be observed that a distinction is to be made between amputation at the knee-joint and amputation at the knee. The former is a pure disarticulation, or at most a disarticulation accompanied by the removal of the articular cartilages of the femur, or of a small portion of the condyles. The latter, frequently spoken of in England as “Carden’s amputation,” is a more extensive operation. In fact, it is not an amputation at the knee-joint at all, but rather an amputation immediately above the joint; for in Mr. Carden’s operation, although the anterior flap is cut from the integuments, and extends for some distance below the patella, yet the femur is sawn across at a point varying from one to two and a half inches above the articulation.

The removal of the lower extremity at the knee-joint is an operation of ancient date. It is vaguely alluded to by Hippocrates, Guy de Chauliac, and by Guillemeau (1612). It is stated that it was performed by Fabricius Hildanus (1632), but this is denied by Textor and Zeis. In later times it was advocated by Hoin, Brasdor, and Blandin, but was not generally received. Its introduction into modern surgery is undoubtedly due to the efforts of Velpeau, who published a memoir upon amputation at the knee in 1829. Of the fourteen authentic cases of amputation at the knee-joint collected by Velpeau, there were thirteen cures.¹ The results, however, of the same operation at the hands of this illustrious surgeon, as set forth in his treatise on operative surgery published in 1832, failed to realize his first encouraging anticipations. In his article upon amputation at the knee he then states, “I fear therefore that I may have exaggerated the

¹ Archives générales de Médecine, t. xxiv. p. 44.

safety of this operation when I attempted to revive it in 1830. It remains proved, however, that the objections which have been made against it have no solid foundation."

For many years after the publication of the above, little appears to have been done or published relative to knee-joint amputation. In November, 1852, Dr. Stephen Smith, in an admirable paper, in the *New York Journal of Medicine*, reported a case of disarticulation performed by Dr. Parker, of New York. He at the same time presented, in a collected form, all of the known and reported American cases, as well as the authentic foreign instances of the same operation.

In January, 1856, Dr. Markoe published in the same journal his well-known paper on amputation at the knee-joint, in which he reports six additional cases which had been mainly treated in the New York Hospital. The advantages of disarticulation at the knee, as compared with thigh amputations, are said by Dr. Markoe to be: 1. The useful character of the resulting stump; 2. The lessened shock of operation; 3. Lessened section of tissues; 4. The non-exposure of the muscular interspaces, and the diminished risk of suppurative inflammation of the thigh; 5. The comparatively few ligatures required; 6. The preservation of the attachments of the thigh muscles; 7. The absence of muscular retraction; 8. The escape from the necessity of sawing the femur, and the lessened risk of osteomyelitis and exfoliation.

In the number of the *New York Journal of Medicine* for November, 1856, Dr. Markoe published an article entitled "Syme's Amputation through the Knee, in Chronic Disease of the Joint," in which he advocated the performance of disarticulation at the knee in many cases of joint disease in which amputation of the thigh had previously been resorted to.

In May, 1845, Mr. Syme published in the *London and Edinburgh Monthly Journal of the Medical Sciences* an article upon "amputation of the knee." In the course of his remarks, Mr. Syme alludes to the heavy mortality which accompanies amputation of the thigh, from 50 to 70 per cent., and then states that having seen the circular incision give way to the flap, and having witnessed the results of the various operations in the hands of the most skilful surgeons, he is led to believe that there must be something wrong in dividing the thigh-bone through its shaft, instead of through its condyles.

The occasion for thigh amputation Mr. Syme states to be, in the order of frequency: 1. Diseases of the knee-joint; 2. Compound fractures of the leg and thigh; 3. Tumours growing from the bones of the leg and thigh. In knee-joint diseases, to use his expression, the "warrant for the amputation lies in the bone and not in the soft parts." In compound fractures of the leg, and in injury and diseases of the thigh, the greatest length of the thigh should be preserved, so that "taking merely the morbid condition into account, all the cases admitting of amputation at or below

the middle of the thigh-bone would admit of the operation being performed through the condyles." Mr. Syme adds that when the operation is performed through the condyles, the medullary membrane is not disturbed, exfoliation of the bone will be avoided, and the patient will preserve a more useful stump. In support of his views he adduces two cases in which he had amputated at the knee.

The operation practised by Mr. Syme consisted in a division of the integuments on a line with the patella and the formation of a large flap from the calf of the leg. The condyles were sawn across and the patella was removed. Influenced by Mr. Syme's recommendation, his operation, in all its essential respects, was employed by Mr., now Sir William Fergusson, Dr. Williamson, Mr. Jones, of Jersey, Mr. Potter, of Newcastle, and others, who have reported their cases. At the hands especially of Mr. Fergusson, the operation was attended with success.

In 1864 Mr. Carden, of Worcester, published, in the *British Medical Journal* for April, a paper on amputation by the single flap, a process practised by him since 1846. In this article Mr. Carden reports thirty cases of amputation through the condyles of the femur, and one case which may be regarded as a proper disarticulation.

The success of Mr. Carden's operation appears, from his report, to have been very great; thus, of four cases of primary amputation after accident, one died, and three recovered; of three secondary amputations after accident, all recovered. He also reports twenty-four cases of amputations for pathological causes, such as diseases of the knee-joint, cancer, and gangrene. Of these, four died and twenty recovered. The large percentage of these recoveries would seem to be in a great degree owing to the character of the operation. This consisted in the reflection of a round or semi-oval flap of skin and fat from the front of the joint, the section of the soft tissues down to the bone, and the division of the femur strictly above the plane of the muscles, thus forming a flat-faced stump. When union was effected, the line of the cicatrix was drawn upwards and backwards, and escaped pressure in locomotion. The patella was removed in the operation.

By comparison of Mr. Carden's operation with Mr. Syme's, it will be observed that in both the thigh-bone was sawn through directly above the condyles, and in both the patella was removed. There was, however, this difference between the two: in Carden's operation the flap was formed of the integuments covering the front of the joint, and containing no muscular tissue, was not liable to slough, and united readily, forming a stump well suited to the application of an artificial limb. In Syme's operation, on the other hand, the flap formed from the muscles of the calf was not so well suited for a covering for the bone as in the former case. Indeed, the superiority of Mr. Carden's procedure over his own is admitted by Syme himself, in the *Edinburgh Medical Journal* for April, 1866, in which he

states that the flap formed from the calf of the leg "proved very inconvenient, and so counterbalanced the benefit anticipated, that this operation soon fell into disuse." Mr. Syme considers that Carden's operation offers these advantages, viz: An ample anterior integumental flap, a short posterior flap, a transverse division of the vessels, a dependent opening to the wound, and an excellent position for the cicatrix. The resulting stump is in every respect a serviceable one, since the "skin over the stump instead of becoming thinner acquires additional thickness, so that the patients could rest upon it, just as they do after amputation at the ankle."

Amputation at the knee-joint proper.—This operation was performed first in Scotland, at the Glasgow Infirmary, in 1847. In England, it was first practised by Mr. Lane, at St. Mary's Hospital, London, in September, 1857. In reporting this case,¹ Mr. Lane dwells upon the advantages which this operation possesses over the ordinary process of amputating through the condyles of the femur. These advantages he believed were apparent in the decreased mortality (for the knee-joint 31 per cent.), and in the increased usefulness of the resulting stumps. Mr. Lane operated by a long anterior integumental flap, and by a short posterior flap, retaining the patella, and the whole of the condyles, with their incrusting cartilages. Mr. Lane has been followed in this method of operating by Sir William Fergusson, Mr. Coulson, of St. Mary's Hospital; Mr. Pollock, and Mr. T. Holmes, of St. George's, Mr. Holthouse, of Westminster, and Mr. Cooper Foster, of Guy's Hospital, and others.

In France the disarticulation at the knee has met with comparatively little favour, the later results of the operation apparently falling short of the sanguine anticipations which had been formed at the time of its revival by Velpeau. In 1854 M. Maisonneuve² performed this amputation upon a woman twenty-two years of age, and in his report of the case he states that "this operation has, during the last ten years, been performed only once or twice in Paris; but this proscription he does not consider merited. He regards this operation as less dangerous than amputation of the thigh, and it possesses this immense advantage that it leaves the patient in a far preferable condition for the application of an artificial limb."

The judgment of so distinguished a surgical authority as Malgaigne, regarding the merits of this disarticulation, is equally decided, and is thus pithily expressed.³ "Encore une de ces opérations trop légèrement condamnées, et qui, lorsqu'on a le choix, mérite toute préférence sur l'amputation de la cuisse dans la continuité." "L'immense avantage qui suit cette désarticulation de l'amputation dans la continuité, c'est qu'elle conserve aux amputés le libre jeu de l'articulation coxo-fémorale."

¹ Lancet, vol. ii., 1857, p. 324, and p. 474.

² Gaz. Méd. de Paris, Sept. 2, 1854.

³ Manuel de Méd. Op., Paris, 1849, p. 316.

In Germany the exarticulation of the knee is but little practised, and chiefly by Textor, of Wurzburg, and in the surgical clinic at Tubingen. In Russia cases are reported by Heyfelder, of St. Petersburg; Vanzetti, of Charkow; and Mazanowski, of the Imperial service.¹ Prof. Heyfelder, who has operated in six cases, believes that amputation at the knee is better, and can be more readily borne by the patient, than thigh amputation.

Military practice.—In European military practice, the results of amputation at the knee-joint have, on the whole, been unsatisfactory. During the Crimean war the operation was performed in the British service six times primarily, with three deaths; and once secondarily, with a fatal result. But we are informed by Dr. Macleod that “to four of the cases operated on in camp, with the details of which I am acquainted, the operation was not applicable, as the femur was more or less injured, so as to call for the removal of part of it; hence the operation, although termed amputation through the knee, was in reality low amputation of the thigh, such as that now employed in acute swelling of the articulation.” In weighing the arguments for and against the operation, Dr. Macleod is inclined to believe that the advantages of this operation more than counterbalance its disadvantages, and he adds that if the cases were selected for the operation, in which the femur was uninjured, and a sufficient flap could be obtained, and the operation performed early, then he firmly believed that he could coincide with Malgaigne in the opinion which we have already quoted.

The opinion of Mr. Longmore, as to the merits in military surgery of the amputation we are discussing, is decided. In a short criticism upon the operation published in the *British Medical Journal* for January 5, 1867, he expresses the hope that “in any future war, amputation of the knee-joint will be performed more frequently than it has hitherto been performed in our army, and with results at least as favourable as those recorded in the United States army reports.”

In the Russian Service, during the Crimean War, but two cases of amputation at this joint are reported by Pirogoff. Both died, and a like fatal result obtained in the two cases reported by Demmé as having occurred during the Italian war.

In the French service, the results of disarticulation at the knee appear to have been particularly disastrous. M. Legouest, at page 735 of his *Traité de Chirurgie d'Armée*, indulges in a most sweeping denunciation of the operation, and dismisses its consideration in this summary manner:—

“La désarticulation du genou est une mauvaise opération, plus grave que l'amputation de la cuisse dans la continuité, et qui doit être rejetée de la pratique. On peut en juger par ces chiffres.”

¹ Canstatt, Jahresbericht., 1857, p. 218.

	Operations.	Deaths.	Rate per 100
Paris hospitals—Malgaigne	3	3	100.0
" " Velpeau	6	4	66.0
Eastern campaign—English army	7	4	57.2
" " French army	78	71	91.0
Total	94	82	87.0

From the figures in this table, and more especially from those which represent the statistics of the French army in the East, it would seem that M. Legouest has reason to regard the disarticulation at the knee, as practised by French surgeons, with suspicion. But in his utter condemnation of the operation, we think he has gone too far; and we are unwilling to receive his decision as the final verdict of the operation. Indeed, from his own figures, the results of amputation at the knee-joint, disastrous as they are, still appear to be more fortunate than those of amputation in the continuity of the thigh. This is evident from an examination of his table comprising the results of thigh amputations in the French army during the same campaigns. Thus we find that of 1678 thigh amputations, 1544 died, a mortality rate of 92.2, against 91.0, the mortality rate of the French disarticulations at the knee. We therefore confess ourselves unable to understand M. Legouest's reasons for his unmeasured proscription of the latter operation.

By the military surgeons of the United States army, during the late rebellion, amputation at the knee-joint was frequently practised. In Circular No. 6, Surgeon-General's Office, Washington, November 1, 1865, Surgeon Otis states that up to October, 1864, one hundred and thirty-two cases of amputation at the knee-joint have been reported to the Bureau.

"Of these, fifty-two recovered and sixty-four died. In six cases amputation of the thigh was subsequently performed, with three recoveries and three deaths. In ten cases the result is undetermined. These figures are encouraging, and if we look at the primary amputations alone, the result is still more gratifying. Of forty-nine cases of primary operations at the knee-joint, thirty-one recovered and sixteen died; while two underwent reamputation, of whom one recovered, and one, a tuberculous subject, died. This gives a percentage of mortality in primary amputations at the knee-joint of 34.9. The mortality in primary amputation at the lower third of the thigh is much larger than this; indeed it has been already indisputably proved by the Crimean statistics, and by M. Malgaigne, that the mortality in amputation augments in exact proportion as the incisions approach the trunk."

In a communication from Surgeon Otis, received since the preceding pages were penned, the following additional information has, with the permission of the Surgeon-General, been furnished to the writer. The whole number of cases of knee-joint amputations recorded in the Surgeon-General's office is two hundred and eleven. Of these ninety-six recovered, one hundred and six died, one is still under treatment, and in eight the result is undetermined. In twelve cases reamputation of the thigh was resorted to, in eight successfully, in three fatally, and one is still under treatment. Of one hundred and ninety-one cases in which the date of

operation is recorded, one hundred and eleven were primary. The average mortality of the whole number of cases is thus 50.2, a percentage greater than that exhibited in Circular No. 6. This increase in the death-rate Dr. Otis states is due to the fact that the later operations have been collected from special reports, and refer chiefly to primary cases which died before reaching general hospitals.

If we compare these results of amputation at the knee-joint, embodied in Surgeon Otis's statistics, with those of thigh amputations performed during the same period, it is apparent that the advantages are greatly on the side of the former. Thus, Surgeon Otis reports fifteen hundred and ninety-seven terminated cases of amputation at the thigh, of which five hundred and sixty-eight recovered, and one thousand and twenty-nine died, a mortality of 64.43 per cent. Of these cases the precise date of amputation was ascertained in one thousand and sixty-one instances; four hundred and twenty-three were primary, and six hundred and thirty-eight were intermediate or secondary. For the former the mortality rate was 54.13; for the latter 74.76.

The conclusions thus arrived at from the examination of so large a number of cases occurring in military practice, tend greatly to strengthen the convictions which we had already formed from our personal observation. We believe that in a proper case, namely, where the gunshot injury is confined to the bones of the leg; or where a ball has opened the knee-joint, without injury to the femur; or where there is extensive laceration of the soft parts of the leg involving the main vessels, amputation at the knee-joint affords the best chance of safety to the patient; *provided*, a sufficient flap of integuments can be obtained. Indeed, even should the condyles of the femur be slightly injured, we are inclined to go further, and coincide in the opinion expressed by Dr. S. W. Gross, that in such a case the operation is not necessarily contraindicated. The character of the flap, however, must always be carefully considered, for where it is integumental and obtained from the anterior or lateral portions of the joint, the patient's chances of recovery are, we think, increased.

That the views above expressed as to the value of amputations at the knee-joint are not exaggerated is, we think, attested by the great number of operations (two hundred and eleven) which have been reported to the Medical Bureau. Dr. Hamilton, in his treatise on Military Surgery, when speaking of this amputation says: "We have ourselves operated many times in the field at this point, and without being able to state the results precisely, we have reason to believe that the operation has been more successful than amputations either immediately above or below the joint." He also adds, "that of the relative safety of this operation we have no doubt."

With this brief review of the operation of amputation at the knee-joint, the following cases are presented. The first seven were operated upon by the

writer; the succeeding thirty-eight, operated upon by the various surgeons whose names are given, have not previously been reported, although in one or two instances short clinical notes appeared in the reports of hospital practice, before the termination of the case. The authority for the histories of these unreported American cases is manuscript information, obtained generally from the surgeon, occasionally from the patient; and personal examination by the writer.

CASE 1.—W. W., aged 11, admitted into St. Joseph's Hospital, Philadelphia, November 23d, 1859, with a compound comminuted fracture of both bones of the right leg, just below the knee-joint, the result of a railroad accident. He had lost a good deal of blood, and the leg was irretrievably ruined; it was therefore decided to remove it at once. As his condition was not good, it was exceedingly desirable to perform such an operation as would be attended with the least amount of shock. At eight o'clock in the evening, about one hour and a half after the accident, I performed amputation at the knee-joint by the double flap method; the anterior flap being purely integumental, while the posterior contained the heads of the gastrocnemius muscle. The condyles of the femur were left with their articular cartilages, and the patella was not disturbed. Ligatures were applied upon the anterior and posterior tibial, and the two sural arteries, and coaptation of the flaps effected. November 24th. Twenty-eight hours after the operation, at midnight, secondary hemorrhage set in, which, although temporarily arrested by styptics, recurred again at 7 A. M., November 25th, to such an extent as to necessitate the opening of the wound. This I accordingly did, breaking up the commencing adhesions, when I found that the bleeding proceeded from the enlarged and divided vessels of the synovial membrane, particularly from those distributed in the intercondyloid region; seven or eight ligatures were applied, and the lips of the wound were again brought together. The child, who was much exhausted by loss of blood, gradually reacted under stimulus and good diet. December 5th. The flaps having failed to unite a second time, the condyles projected at either angle of the wound, and granulations formed freely upon the bone up to the line of the articular cartilages. These latter now softened and became thinner, so as to render distinctly visible the vessels upon the surface of the bone beneath. Granulations formed rapidly upon the crucial ligaments. December 10th. The last ligature separated. December 13th. During the preceding week the cartilage covering the outer condyle disintegrated molecularly, and its place was supplied by healthy granulations from the bone; the cartilage covering the inner condyle gradually loosened from its attachments, and was removed by the forceps in an entire layer. The surface of the bone beneath was covered with florid, healthy granulations, which by the 25th of December had attained to the same height as those growing from the other portions of the bone, so that at this time, the entire granulating surface of the stump presented a uniform, smooth level. Cicatrization now rapidly ensued, and on the 23d of February the child left the hospital with a well healed, solid stump. The convalescence of this patient had been somewhat retarded by the formation of one or two abscesses upon the thigh, which were opened.

I examined the patient in the early part of 1866, and subsequently in 1867. He is now fully grown, and in good health. He walks with a crutch from preference, his circumstances having hitherto prevented the

purchase of an artificial limb. The stump is firm, round, not painful upon pressure, and possesses great power of rotation, abduction, and adduction. The patella is drawn upwards about two inches towards the outer surface of the limb.

CASE 2.—W. McG., aged 10, admitted into St. Joseph's Hospital October 17, 1865, with a compound comminuted fracture of the tibia and fibula immediately below the knee. He had been run over by a street car in the afternoon. The hemorrhage had been considerable, and the shock of the injury was severe. On the same evening I removed the limb at the knee-joint, making a long anterior and a short posterior integumental flap. The heads of the gastrocnemius were shaved off, and the popliteal artery was cut squarely through. Ligatures were applied upon this vessel, two articular arteries, and upon the popliteal vein. The condyles and patella were left, and the articular cartilages were not disturbed. Nearly perfect union by first intention ensued; a very small slough formed over the external condyle, a portion of the cartilage of which came away in one layer, when granulation from the subjacent bone rapidly took place. The last ligature separated on November 4th, and the boy was discharged from the hospital cured on December 18th, with a perfectly rounded stump, capable of great motion and powerful rotation.

This child was subsequently admitted into the hospital with a simple fracture of the same thigh, caused by a fall from a wagon. The stump in the interim was sound and painless. The fracture of the femur quickly united, and he left the hospital well.

CASE 3.—Mrs. Ellen P., aged 22, of New Jersey, admitted as a private patient into St. Joseph's Hospital July 19th, 1866, with a large pulsating tumour of the right foot. The pulsation was most marked on the outside, just below the external malleolus, and could also be felt upon the inner side near the point of the heel. The internal saphena vein was greatly enlarged, and a purring sound could be distinctly heard over it, almost as high up as the knee. No cause could be assigned for this affection; the patient stated that it had existed for about two years, and that hemorrhage from an ulcer on the outside of the tumour frequently occurred to an alarming and weakening extent.

Finding that simultaneous pressure upon the anterior and posterior tibial arteries controlled the pulsation in the tumour, I tied, on the 26th of July, these vessels in their middle third. The operation was troublesome, from the fact that even the smallest veins, when divided, bled with an arterial jet. I at the same time tied the internal saphena vein, and the venæ comites of the arteries, all of which pulsated. After these ligations, the tumour decreased in size and the pulsation in it ceased.

On the 28th of July the pulsation in the tumour returned, and hemorrhage occurred from the ulcerated point on its surface. This was for the time controlled by pressure and styptics. The styptic which I employed was one which I have used largely in military practice with marked success, and which was originally suggested to me by Doctor Pancoast. It consisted of castile soap, one drachm; carbonate of potash, two drachms; and alcohol, four ounces, applied upon a pledget of lint. On July 31 I removed the limb at the knee-joint. I selected this point for amputation on account of the diseased condition of the vessels which my previous operations, as well as auscultation at the time, informed me extended above the

middle of the leg. The operation was precisely similar to the one described in the preceding case, by the formation of a long anterior and short posterior integumental flap; the condyles and their cartilages, and the patella were left untouched. The popliteal artery was cut short, and the end of the ischiatic nerve excised. Seventeen ligatures were applied, all but three or four upon veins, which were greatly enlarged. The anæsthetic used was chloric ether. But little blood was lost, and the patient rallied promptly and perfectly from the shock of operation. On the following morning I found her, to my great surprise, sitting up in bed and knitting.

Union throughout four-fifths of the wound took place by first intention. The suppuration from the wound was moderate. The last ligature, that upon the popliteal artery, came away on the 23d of August, and early in September the patient returned to her home well, and with a perfect stump, possessing the usual great mobility peculiar to that amputation. In October, 1867, Mrs. P. was fitted with an artificial limb, upon which she walked with facility.

CASE 4.—On the 2d of April, 1867, I was called to see Mr. B., a gentleman aged 53, whose leg had been caught in the belting of machinery, by which it had been dragged through the opening in the floor for the belt, producing a compound dislocation of the ankle-joint, with fracture of the tibia and fibula. The dislocation was reduced, and every effort was made to save the limb. These efforts, however, proved unsuccessful, and accordingly it was determined, in consultation with Drs. Gross, S. W. Mitchell, and J. C. Norris, to remove the limb. The condition of the parts forbidding amputation in continuity of the leg, on the 7th of April, I amputated at the knee, by the process employed in the two foregoing cases. The patient's morale and general condition were fair, with the exception of an occasional irregular action of the heart. Ether was very cautiously administered. He bore the operation well; lost very little blood, and reacted promptly; about forty minutes, however, after the completion of the operation, and after he had been placed back in his bed the heart's action became exceedingly irregular, and he appeared to be suffering from severe shock, from which he was roused with difficulty by means of alcoholic and diffusible stimulants. His intellect was clear.

On the 9th and 10th of April his condition was only tolerable, and he was troubled much by irregular cardiac action. On the evening of the 11th he went to sleep with a clear mind, but awoke about 9 o'clock violently delirious, and with uncontrollable jactitation, screaming continuously, and tossing and tearing the coverings from his bed. On the 12th he became more quiet, although still delirious, and recognizing no one. He continued in this condition for about thirty hours, becoming gradually more and more exhausted, and died early on the morning of the 13th of April. No post-mortem examination of the body was permitted. The death, in all probability, resulted from cerebral effusion or extravasation. The appearance of the stump, when opened after death, was in no respects abnormal.

CASE 5. Mr. T. E. B., on the 5th of June, 1867, fell under the wheel of a street car, receiving a compound fracture of both bones of the left leg, at the junction of the lower with the middle third. He was admitted into St. Joseph's Hospital on the same day, and an attempt was made by

the surgeon on duty to save the limb. The leg was placed in a fracture-box, and the usual bran dressing was employed. In the course of a month bony union of the fracture to a certain degree took place, but the external wound did not entirely heal. Abscesses also formed in the leg, above the seat of fracture, and burrowed toward the knee, and the integuments assumed an unhealthy appearance. On the 7th and 8th of July, three severe hemorrhages occurred from the open wound; these were restrained by pressure. During the summer the patient's condition improved, the leg became somewhat stiffer, and although the external opening did not entirely heal, the man was regarded as convalescent.

On the 9th of November a very severe secondary hemorrhage took place from the external wound; this was arrested by pressure over the femoral artery. On the night of the same day, during the patient's sleep, the hemorrhage recurred to a fearful extent, saturating the bed. It was controlled by the tourniquet.

On the morning of November 10th, in consultation with the surgical staff of the hospital, I removed the limb at the knee-joint. I was led to choose that point of operation by the evidently impaired vitality of the integuments and the doubtful condition of the bone, but more especially by my desire to avoid subjecting the patient, in his then weakened and ensanguine state, to any shock which might possibly be avoided. The operative procedure employed was that already described in the preceding cases. Ligatures were applied upon the popliteal artery and vein, and upon one articular artery. The end of the popliteal nerve was excised.

This patient did well, and the ligature on the popliteal artery separated on the tenth day after the amputation. A slight slough formed upon the lower flap, which was followed by granulation. A small portion of articular cartilage remaining as a foreign body, kept up some little irritation, which retarded the cure. The stump is now becoming firm, is not painful upon pressure, and promises to be satisfactory.

CASE 6. At the battle of Fredericksburg, in December, 1862, I amputated at the knee-joint, for gunshot fracture, the leg of a soldier about thirty years of age. The process employed was the same as that already described. Although I did not see this man after the operation, I subsequently learned that he did well, and recovered with a good stump.

CASE 7.—During General Grant's Wilderness campaign, I amputated at a hospital in Fredericksburg, the leg of a young soldier at the knee-joint. The injury was a gunshot wound of the upper portion of the tibia, involving the articulation. The process was that already described. This man did well for three days. At the expiration of this time, orders were received to remove all patients from the temporary hospitals, and to vacate Fredericksburg. I was subsequently informed that as this soldier was being lifted into the ambulance for transportation to the boat, a sudden and uncontrollable hemorrhage occurred, which proved almost immediately fatal. Owing to the pressing exigencies of the occasion, opportunity was not afforded for an examination of the stump after death.

CASE 8.—Operations by Dr. D. Hayes Agnew. Bridget B., aged 30, of strumous diathesis, an inmate of the Philadelphia Hospital, had suffered from an affection of the right leg for a period of twenty-five years. The ankle was ankylosed, and the tibia was diseased for nearly its whole extent. There was great ulceration of the leg. In December, 1859, Dr.

Agnew amputated the limb at the knee-joint, making a long anterior integumentary flap, including the patella, and a short posterior skin flap. The semilunar cartilages were removed.

Union by first intention to a great extent took place, and the patient recovered at the expiration of five weeks, with an excellent stump, possessing great motion. She has since worn an artificial limb without the slightest inconvenience.

CASE 9.—P. W., a German, aged 50, a patient, an inmate of the Philadelphia Hospital, had suffered for six years from a chronic ulcer of nearly the entire circumference of the lower half of the leg, with extensive necrosis of the tibia. In October, 1864, Dr. Agnew amputated the limb at the knee-joint, by the same operation as in the last case. The patient recovered promptly.

CASE 10.—A German, of middle age, had been run over by a street car, which terribly mutilated one leg, and produced also severe internal injuries. Reaction was slow and never very well established. Amputation at the knee-joint was performed by Dr. Agnew at the Philadelphia Hospital several hours after the occurrence of the accident in the same manner as in the preceding case. The patient died within twenty-four hours; more from his bodily injuries than as a result of the operation.

CASE 11.—An Irishman, aged 27, of great physical development, was brought into the Pennsylvania Hospital, in 1866, with a compound comminuted fracture of the bones of the leg, as high as the tubercle of the tibia. The injury was caused by the wheel of a street railroad car. The leg was amputated primarily, by Dr. D. H. Agnew, at the knee-joint in the same manner as in the preceding cases. The recovery in this instance was tedious, not caused by any misbehavior on the part of the stump, but from abscesses which formed in the thigh; the result, in Dr. Agnew's opinion, of contusions received at the time of the accident. This patient was discharged from the hospital cured in about twelve weeks with a serviceable stump upon which he has since worn an artificial limb.

CASE 12.—Operation by Dr. Edward Peace. E. McIL, aged 15, was admitted into the Pennsylvania Hospital for a deformed and ulcerated leg, the result of a railroad injury received six years previously. On Sept. 17th, 1844, Dr. Peace amputated the leg at the knee-joint by antero-posterior flaps. The patella and condyles were not disturbed. The wound was long in healing, but the boy recovered and was discharged from hospital, March 1st, 1845. [MSS. information received from Dr. George W. Norris.]

CASE 13.—Operations by Dr. A. Hewson. A young man, aged 26, was admitted into the Pennsylvania Hospital, in 1862, with a compound comminuted fracture of the leg produced by a railroad car. Primary amputation at the knee-joint was performed. The procedure employed was that by antero-posterior flaps. The articular surfaces of the condyles were sawn off, as also was that of the patella. The latter bone was then brought down upon the sawn face of the femur, as in Gritti's operation. This patient recovered with a good stump.

CASE 14.—A man, aged 37, was taken to the Pennsylvania Hospital, in 1862, with a leg crushed from a railroad accident. The limb was removed by Dr. A. Hewson at the knee-joint by a primary amputation performed in the same manner as in the preceding case. The man recovered with a satisfactory stump.

CASE 15.—L. N., aged 23, was admitted into the Pennsylvania Hos-

pital, in 1863, for a railroad injury of the bones of the leg. Primary amputation of the limb at the knee-joint was performed by Dr. A. Hewson, the same procedure as that already described. Two acupressure needles were used to arrest the hemorrhage. This patient died from pyæmia about three weeks after the amputation.

CASE 16.—Miss G., aged 22, suffered from a large enchondromatous tumour of the leg. In April, 1863, the limb was amputated by Dr. A. Hewson, at the knee-joint, by the process described in the preceding cases. The patient recovered rapidly, with an admirable stump. She has worn an artificial limb ever since.

CASE 17.—E. S., received a compound comminuted fracture of the foot from a railroad accident on the 19th of March, 1866. The laceration of the skin extended as far up as the knee. Primary amputation was performed by Dr. A. Hewson at the knee-joint, as already described. One acupressure pin was employed. The patient did well, although a troublesome ulcer remained on the stump which delayed his discharge from the house until the 5th of November, two hundred and thirty-one days after his admission.

CASE 18.—Operations by Dr. F. F. Maury. S. C., aged 14, was admitted into the Philadelphia Hospital in the spring of 1867. She had a spina-bifida from birth. The tumour, at the date of admission, was the size of a large cocoanut. She had also lateral curvature of the spine. Until she reached the age of twelve years her general health was good; she suffered no inconvenience from the spinal tumour, except that she could not sleep on her back. Talipes valgus of the left foot developed itself during her twelfth year. More than a year before her admission she trod upon a piece of glass with her right foot. Inflammation ensued, followed by ulceration and sloughing, which extended to the tarsal bones, opening the joint, involving the bones as well as the soft parts, and subsequently almost separating the foot from the leg.

On the 11th of September the leg was amputated at the knee-joint, by antero-posterior integumental flaps. The patella was retained, and also the condyles of the femur with their cartilages. Very little blood was lost during the operation. The child did well for four days, but on the 15th, symptoms of trismus became apparent, followed on the 16th by general spasms, and on the 17th by complete opisthotonos. She died at 3.30 A.M. on the 18th. The treatment in this case consisted in the hypodermic use of sulphate of morphia, and of the fluid extract of the calabar bean.

CASE 19.—In March, 1864, a coloured man, aged about 35, was admitted into the Philadelphia Hospital with gangrene of the leg, the result of exposure to cold. Amputation at the knee-joint by a long-anterior, and short-posterior integumental flap, was performed by Dr. F. F. Maury. The patella was left, and the articular surfaces of the condyles of the femur were shaved off. The vessels were found to be filled with fibrinous clots; there was little or no hemorrhage, and no ligatures were applied, not even to the popliteal artery. The angles of the wound subsequently sloughed, so as to expose the condyles of the femur. These were sawn off, and granulation of the whole surface resulted. This man made a satisfactory, though somewhat tardy cure. He was discharged from the hospital well, with a good stump, and afterwards walked with a peg leg.

CASE 20.—Operation by Drs. Lilly and Coleman, of New Jersey. H. K., between 25 and 30 years of age, an engineer on the Belvidere and Delaware Railroad, had his leg crushed to the knee, in a railroad collision

on the 6th of July, 1858. The following account of this case has been furnished the writer by Dr. Lilly:—

“Upon examination we found that the tibia and fibula were so crushed and comminuted that an amputation below the knee was impossible. The option was presented of cutting through the knee-joint, or of amputation through the femur. Upon consultation we decided on the former, there being sufficient integument uninjured on the posterior surface of the leg for a good flap. The tendon of the patella was divided about an inch below that bone: the joint was severed by a few strokes of the catlin, and the flap was formed by a single cut with that instrument. The synovial membranes, and the cartilages covering the condyles of the femur, were freely scarified with a scalpel, and to that we attributed the absence of synovial fluid during the healing process, which was accomplished in about six weeks without any untoward symptom.

“The stump, which was fitted with an artificial limb by Mr. Palmer, of Philadelphia, is a most serviceable one—much better, I think, than could have been obtained from an amputation of the thigh. K—, since the accident, has led an active life, walking without the use of a cane or crutch, and is now, and has been for some years, running an engine in the employ of the railroad company.”

CASE 21.—Operations by Dr. T. G. Morton. A. H., aged twelve years, of strumous parentage, was admitted into the Pennsylvania Hospital June 3, 1864, for long-standing scrofulous disease involving the ankle-joint, and with caries of the tibia in its entire extent. Amputation at the knee-joint was performed June 11, by a long anterior and short posterior flap. The condyles of the femur were ulcerated, and their extremities were therefore removed; six ligatures were applied, and the wound was closed with lead sutures. The patient's health improved rapidly, and the stump was well in twenty-four days. She was discharged cured July 11, 1864, with a good stump.

CASE 22.—W. N., aged 30, Co. N, Pennsylvania Volunteers, was admitted into Satterlee Hospital June 10, 1863. He had received a compound comminuted fracture of the right leg, from a conoidal ball at White Oak Swamps, Va., June 29, 1862. Amputation was performed the same day on the field, but the flaps sloughed, and afterwards excessive hyperostosis of the extremities of the bones occurred with ulceration. (See p. 47, Circ. No. 6, and Catalogue A. M. M., Spec. 2778, p. 53 S. G. O.) Re-amputation at the knee-joint was performed by Dr. Morton by long anterior and short posterior flaps, August 27, 1863. The patella and condyles were not disturbed. This patient made a good recovery, with a useful stump. Discharged March 3, 1864. December 24 the stump was good, and had caused no trouble since the operation. The extremities of the condyles were somewhat absorbed, and the end of the stump was flattened. The integument was quite movable, and the patella was drawn up about an inch and a half, and occupied a central position. He has worn an artificial limb ever since.

CASE 23.—A soldier, aged 46, was treated in the Satterlee Military Hospital for extensive necrosis of the bones of the right leg, and loss of the integuments, the result of a shell wound. In this case amputation was performed by Dr. T. G. Morton at the knee-joint by antero-posterior integumental flaps, retaining the patella and condyles of the femur. The cure, although protracted, was satisfactory.

CASE 24.—J. M., a labourer, was brought to the Pennsylvania Hospital June 11, 1864, having been run over on the Pennsylvania Railroad. Both legs were crushed below the knee. The man was very much intoxicated, and his condition did not warrant immediate operation. On

the morning of June 12 the right leg was amputated by Dr. T. G. Morton at the knee-joint by long anterior and short posterior integumental flaps, leaving the patella and condyles intact. The left leg was at the same time amputated four inches below the knee-joint. But very little blood was lost in these operations; the patient reacted, but died at ten o'clock on the same night.

CASE 25.—J. M., aged 31, on the 15th of December, 1864, was admitted into the Pennsylvania Hospital with a compound comminuted fracture of the right leg, from a railroad accident. Amputation of the leg in continuity was performed by Dr. T. G. Morton, ten hours after the injury. Extensive sloughing, with burrowing abscesses and necrosis of the bones of the stump ensued. Four weeks afterwards the head of the tibia became necrosed. In April, 1865, re-amputation of the limb at the knee-joint was performed by antero-posterior integumental flaps. The patella was saved, but the extremities of the condyles of the femur were sawn off. This patient did well, and was discharged cured on the 20th of June. He has since been employed as an attendant at the Pennsylvania Hospital for the Insane, and for the last two years has not lost a moment from work on account of the stump, which is well rounded, with loose integuments. He is able to rest a great portion of his weight upon the stump.

CASE 26.—J. R.; a negro, aged 37, received on the railroad, Dec. 12th, 1865, a compound comminuted fracture of the right tibia and fibula, which extended up into the joint. Amputation at the knee-joint was performed, by Dr. T. G. Morton, according to his usual antero-posterior flap method. The patella was saved, and the extremities of the condyles sawn off. Three vessels required ligation. The case did well until December 12th, when the patient had a violent chill, which was followed by great prostration. The chills recurred at intervals, and death took place on December 21st, 1865.

Autopsy.—Numerous secondary deposits were found in the lungs—pleuritis also existed. No deposits were found in the abdominal viscera. The lymphatic glands of the right thigh were enlarged and suppurating; the right femoral vein contained an ante-mortem, and partially decomposed coagulum.

CASE 27.—J. K., aged 56, a woman of feeble health, received a compound fracture of both bones of the left leg, at the junction of its middle and lower thirds by a fall from a height of two feet. Amputation was advised, but was not consented to by the patient, on the day of the accident, October 18th, 1867. Extensive necrosis, and deeply dissecting abscesses then formed in the leg. Amputation at the knee-joint was performed by Dr. T. G. Morton, December 1st, 1867, by lateral integumental flaps. The patella and condyles were left undisturbed. Four ligatures were applied. About the 5th day after the operation an abscess formed upon the inside of the thigh, which was opened. On the 11th day the last ligature separated. A portion of the flap covering the external condyle sloughed, but the granulations from the bone sprang up rapidly, and by the expiration of the 30th day the surface of the stump was healed. The patient is perfectly recovered, and will have a useful stump.

CASE 28.—Operation by Dr. Wm. Hunt. M. L., aged 20, was admitted into the Pennsylvania Hospital September 12th, 1864. He had some months previously met with a railroad accident, for which his leg had been amputated in continuity. He now entered the hospital on account of an ulcer which existed upon his stump. Dr. Morton endeavoured by a species

of plastic operation to remedy this trouble, but retraction of the tissues occurred, and Dr. Hunt was subsequently obliged to reamputate the limb. The operation was performed at the knee-joint, the articular surfaces of the condyles and patella were sawn off, and the patella was then turned down upon the sawn end of the femur, to which it formed a firm union. The patient was discharged from the hospital on the 17th of February, 1865, 158 days after the last operation. He wore an artificial limb with ease, and has since returned to Ireland.

CASE 29.—Operations by Dr. Kenderdine. B. W., aged 37, female, was received in the Pennsylvania Hospital May 19th, 1864, for serofulous curies of the left ankle and foot. Eight months previously her right leg had been amputated at the knee-joint, by Dr. Kenderdine. The patella had been saved, and the extremities of the condyles had been taken away. The stump was an excellent one in every respect. Its extremity was very flat, and the integuments were movable over it.

CASE 30.—In 1862 Dr. K. at the Philadelphia Hospital, amputated at the knee-joint the leg of a middle-aged man, for necrosis of the tibia and fibula. The patella, and the condyles of the femur were taken away; the flaps were integumental, and were formed from the anterior and posterior surfaces of the limb. At the time of operation, this man was in a very poor condition. He died at the expiration of twelve days, from pyæmia.

CASE 31.—Operation by Dr. Edward Shippen (late surgeon U. S. Vols.). On February 18th, 1865, Corp. E. P. R., Co. G., 107th Ills. Vols., was wounded before Fort Anderson, on the Cape Fear River, a few days before the capture of Wilmington, N. C. Both bones of his left leg were shattered by a shell, and at the same time the muscles of the calf were horribly mutilated. Four or five hours after the reception of the wound, surgeon Shippen amputated the leg at the knee-joint, by Bauden's operation, leaving the patella and condyles undisturbed. The patient was under the influence of chloroform. After the operation he did well for some days, and was sent North on the hospital steamship Spaulding, on the 28th of February. Dr. S. has since been informed that this soldier died of pyæmia at the Jarvis Hospital, Baltimore, on the 22d of April, more than two months after the operation was performed.

CASE 32.—Operation by Dr. Erskine Mason, of New York. In December, 1867, the writer examined the stump of J. M., whose leg had been amputated at the knee-joint. This man stated that in February, 1864 he had been wounded at the battle of Olustee, Florida, by a musket-ball, which lodged in the substance of the patella, and was removed on the following day. He remained a prisoner at Tullahoma for three months, and at Andersonville for six months, and was exchanged at Savannah in November of the same year. He was afterwards treated at the Chestnut Hill Hospital, Philadelphia, and was discharged from service in the early part of 1865. On the 28th of May, 1865, his leg was amputated at the Blackwell's Island Hospital. Dr. Mason, the operator, in a letter to the writer, states that at that time the joint was painful, enlarged, and partially ankylosed. The leg was atrophied, its temperature low, and there was great venous congestion. The operation was performed by antero-posterior flaps, the heads of the gastrocnemius being included in the posterior flap. The condyles of the femur were found to be eroded, and about one inch of their extremities was sawn off. On the evening of the day of operation there was some secondary hemorrhage, which was checked

by the application of ice. The flaps, however, healed almost by first intention.

The patient was confined to his bed forty-eight days, and was discharged from the hospital cured, at the expiration of about sixty days.

When examined by the writer, the patella was found to be firmly adherent to the anterior surface of the femur, and the condyles were flattened; the stump was a model one in every respect. There was no pain or tenderness; the patient was able to bear his whole weight on the end of the stump, to move about freely and to jump with his artificial limb, which was a home-made peg. This he had worn since July 17, 1865.

CASE 33.—C. S. P., a soldier, 12th New York Volunteers, was wounded in the leg June 3d, 1864, at the battle of Cold Harbor, Va. He lay on the battle-field all day, and on the following morning his leg was amputated at the knee-joint. The flaps were integumental, and were obtained from the front and back of the limb. The patella was left; the articular surfaces of the condyles were removed. This soldier recovered rapidly, and at the expiration of nine months from the time of operation could walk freely with an artificial limb. He can now bear his full weight upon the end of his stump. The movements of rotation of the thigh are very perfect.

CASE 34.—Amputation at the knee-joint was performed by a distinguished surgeon upon a young adult patient. The condyles and patella were not removed. The patient recovered; an artificial limb of the most approved pattern was fitted to the stump, and the patient's daily avocations were resumed. These were arduous in nature, and demanded constant locomotion; as a result, excoriation of one or two points upon the surface of the stump took place; the patient became dissatisfied with the stump, and a reamputation in the continuity of the thigh was subsequently performed by another practitioner.

The mechanic who adjusted the artificial limb used before reamputation, stated to the writer that when he examined the stump, the excoriation was small, superficial and apparently of little importance. It had been caused by excessive walking. The adjustment of this limb, he stated, could easily have been arranged so as to have taken away all pressure from the end of the stump. The interval between the two operations was several years.

CASE 35.—Operation by Surgeon E. Bentley, U. S. Volunteers. E. L. P., æt. 21, received a shell wound of the leg at the battle of Cedar Mountain, Va., August 9, 1862. Primary amputation at the knee-joint was performed by the surgeon above named. The articular surfaces of the condyles were sawn off, and the patella was left; the stump healed rapidly and the patient recovered without accident in four months. He has since been in four battles, and on one occasion was captured and was obliged to walk fifty-four miles between sunrise and 9 o'clock P. M. The stump is painless, and the patient has informed the writer that he can walk, dance, mount his horse and ride with perfect facility. He attributes much of the usefulness of his limb to the presence of the patella. The writer has had frequent opportunities of examining this stump, and of seeing Captain P. walk and ride; the stump is in every respect excellent, and one of the very best he has ever seen.

CASE 36.—Operation by Doctor Pancoast. On the 27th of June, 1863, J. P. H., a boy aged 8, was admitted in the Pennsylvania Hospital with a crushed fracture of the leg, the result of a railroad accident. Immediate

amputation was performed at the knee-joint by Dr. P., who sawed off the condyles, leaving the patella, and making long anterior and short posterior skin flaps. The child did well until the fourteenth day after the operation, when he had a marked chill; the flaps sloughed, and the patella which had been left upon the sawn end of the femur retracted, and the end of the femur was left uncovered; he grew worse and died of pyæmia thirty-two days after admission. At the post-mortem examination metastatic abscesses were found in the lungs, liver, and spleen.

CASE 37.—Amputation at knee-joint by Dr. Stephen Smith. Margaret B., aged 65, Irish, admitted to Bellevue Hospital November 21, 1866. She stated that a short time since, while crossing a street, she was knocked down and run over by a loaded truck. On examination the tibia and fibula were found to be fractured about three inches above the ankle-joint; the tibia was much comminuted, and communicated externally by a small opening. The soft parts were greatly contused. Dr. Smith proceeded to amputate the leg at the junction of the upper and middle thirds, but finding the tissues in very bad condition, he extended his incisions, removing the limb at the knee-joint by internal flaps. The patella and condyles were left. The patient did well, a small portion of the flap sloughed over the posterior portion of the external condyle, but the surface soon granulated. By the third of January, 1867, the wound was healed with the exception of one small ulcer. By the 1st of April the wound was completely healed. Dr. Smith now writes (January, 1868), that the cicatrix lies behind the stump, between the condyles, and does not rest upon any portion of the face of the stump, or over the condyles. The stump is an excellent one, and bears pressure well.

CASE 38.—In 1860 Dr. S. D. Gross amputated, at the knee-joint, the leg of a woman aged 45, for compound fracture of the bones of the leg. The operation was immediate. The flaps were anterior and posterior, and were formed from the integuments. The patient recovered with an excellent stump.

CASE 39.—The same surgeon, in the year 1862, for gangrene following a complicated fracture of the leg, successfully removed at the knee-joint the limb of a woman aged 55. The flaps were formed in the same manner as in the preceding case. The articular surfaces of the condyles were shaved off and the patella was left. The resulting stump was serviceable and satisfactory.

CASE 40.—In 1863, Dr. John K. Kane, of Wilmington, Delaware, at the Chester Hospital, amputated at the knee-joint the leg of S. L., æt. 18, a soldier who had received a gunshot fracture of the tibia and fibula several months previously. The flaps, which were integumentary, were obtained from the front and back of the limb; the patella and condyles were left. The patient died six days subsequent to the operation from pyæmia.

CASE 41.—H. C. P., æt. 30, Co. B, 12th N. Y. Vols., on the 27th of June, 1862, received a gunshot fracture of the right tibia. The ball was not extracted, but remained resting against the posterior surface of the tibia. Extensive necrosis of the tibia, with sloughing of the soft tissues, resulted. The patient was sent to Chester Hospital, and on March 14, 1863, Dr. Draper, of Wilmington, Delaware, disarticulated the leg at the knee-joint, by the long anterior flap method. The patella and condyles were left undisturbed. The cure was effected rapidly, and the resulting stump was good.

CASE 42.—W. H., æt. 28, Co. B, 14th Tenn. Inf., C. S. A. Admitted into Chester Hospital July 17, 1863. He had been wounded on July 3, by a ball which fractured the tibia just below the tuberosity. Extensive sloughing had occurred, which opened the posterior tibial artery, causing profuse hemorrhage. On the 23d of July the limb was amputated at the knee-joint by Dr. Draper, by a procedure similar in every respect to that employed in the preceding case. The patient died of exhaustion on the twenty-first day after the operation.

CASE 43.—W. W., æt. 22, Co. D, 52d N. C. Inf., C. S. A. Admitted into Chester Hospital July 14, 1863. This man, on the 3d of July, 1863, had received a gunshot fracture of the left tibia, the ball perforating the bone from before backward. He had also received a gunshot fracture of the metatarsal bones of the left foot. Sloughing ensued, with great burrowing of pus in the calf of the leg. On August 4, 1863, Dr. Draper amputated the leg at the knee-joint by the process employed in the two preceding cases. The patient made a good recovery, with a sound and useful stump.

CASE 44.—At the battle of Fredericksburg, Dec. 13, 1862, Assist. Surg. C. C. Lee, U. S. A., amputated at the knee-joint the limb of a soldier who had received a gunshot wound in the upper part of the leg a few hours previously. The flaps were integumental, and were taken from the front and back of the joint. The condyles and patella were left. The patient recovered.

CASE 45.—The same surgeon, at the Douglas Hospital in Washington, disarticulated at the knee-joint the leg of a soldier about 35 years of age, who, some days previously, had received a gunshot fracture of the head of the tibia, the fracture extending into the joint. The patella was left, and the tips of the condyles were sawn off. This patient died about three days after the operation, from general exhaustion and with slight symptoms of pyæmia.

The following American cases of amputation at the knee-joint have already been reported. Only their outlines are therefore submitted, with the references.

CASE 46.—Dr. Nathan Smith, of Connecticut, in April, 1824, amputated at the knee-joint the leg of Miss R. D., of Brunswick, Me., for long-standing disease of the bones and soft parts of the leg. Operative process—Anterior skin flap, leaving patella; and posterior flap of gastrocnemius. The patient recovered.—*Am. Med. Review*, vol. ii. p. 370.

CASE 47.—M. Blaquiere, in 1833, amputated at the knee-joint the leg of a Mexican Indian, æt. 25, for gangrene produced by the application of hot bricks during the cold stage of Asiatic cholera. Velpeau's operation. Recovery.—Mott's Velpeau, 1856, p. 243, from *Journ. des Connaiss.*, Paris, Août, 1844, p. 60.

CASE 48.—Dr. Catley, of Delaware, reports the case of S. S., æt. 33, whose leg was amputated at the knee-joint, in 1835, by a practitioner (not named), for gangrene, the result of a tight bandage applied just above the knee for laceration of popliteal artery. Reamputation of thigh thirteen years afterwards. Recovery.—*Ohio Med. and Surg. Journal*, vol. i. p. 126.

CASE 49.—Dr. Markoe, in the *N. Y. Journal of Medicine* for January, 1856, states that in 1841 he examined at the New York Hospital an excellent stump of the knee-joint amputation.

CASE 50.—In 1841, Dr. Pancoast, at the Philadelphia Hospital, removed at the knee-joint the leg of R. M., æt. 35, for necrosis of entire shaft of tibia. Operation by three integumental flaps, the patella and condyles of femur being left. Recovery.—Pancoast's *Operative Surgery*, 1846, p. 169.

CASE 51.—Dr. Stephen Smith, in the *N. Y. Journal of Medicine* for November, 1852, p. 318, reports the case of a saddler whose leg had been disarticulated at the knee with a razor, for gunshot injury of the leg. This patient presented himself at the clinic of the College of Physicians and Surgeons.

CASE 52.—The same surgeon in the same article reports the case of a coloured man upon whom amputation at the knee-joint was practised by Dr. Sabine, some years prior to report, for gangrene of the leg, following ligation of the femoral artery. Recovery.

CASE 53.—In the *N. Y. Journal of Medicine* for January, 1856, Dr. Markoe reports the case of E. C., æt. 35. Amputation at knee-joint, by circular method, by Dr. J. Kearney Rodgers, Feb. 9, 1846, at the New York Hospital, for severe burns. The patella was not removed. Died March 7, 1846.

CASE 54.—In the same *Journal*, Dr. Markoe also reports the case of T. H., æt. 21, whose leg was amputated previously at the knee-joint, for a railroad accident, by Dr. J. K. Rodgers, of the New York Hospital, Oct. 19, 1849. Antero-posterior skin flaps. This patient died Oct. 22, 1849.

CASE 55.—In the same paper, Dr. Markoe alludes to the case of D. B., æt. 36, whose leg was amputated at the knee-joint, at the New York Hospital, Jan. 21, 1849. Cause, syphilitic disease of the bones of the leg, followed by gangrene. Death Jan. 29, 1849.

CASE 56.—On the 7th of April, 1852, Dr. Parker, of New York, amputated at the knee-joint the leg of J. McN., æt. 25, for paralysis and atrophy of right leg, following an attack of scarlet fever at four years of age. Anterior integumental and posterior muscular flaps. Secondary hemorrhage on fifth, sixth, eleventh, twelfth, thirteenth, and twentieth days. Ligation of femoral artery on thirteenth day, and reamputation in continuity of femur on twentieth day. Recovery.—*N. Y. Journal of Medicine*, Nov. 1852.

CASE 57.—On the 30th of April, 1852, Dr. Buck, at the New York Hospital, removed at the knee-joint the leg of J. McA., æt. 13, which had been crushed a few hours before by two bars of railroad iron which fell upon it. Anterior and posterior flaps, and ends of condyles sawn off. Recovered.—*N. Y. Journal of Medicine*, Nov. 1852, and Jan. 1856.

CASE 58.—M. R., æt. 50. Amputation at knee-joint, by Dr. Buck, at the New York Hospital, for railroad crush of leg, Feb. 18, 1852. Small anterior and large posterior flap; patella left. Recovered with a good stump.—*N. Y. Journal of Medicine*, Nov. 1852, and Jan. 1856.

CASE 59.—Dr. I. Moses reported to the New York Pathological Society the case of J. S., æt. 26, a Mexican, whose leg he amputated at the knee-joint, Nov. 22, 1854, for gunshot wound of leg, received five months previously. Short anterior skin flap, and long posterior muscular flap (Hoin's method). Condyles and patella left. Recovery with good stump.—*N. Y. Journal of Med.*, Jan. 1856.

CASE 60.—A. M. H., aged two years and three months. Railroad crush of right leg, and laceration of soft parts of left leg. Right leg amputated by Dr. Markoe, May 18, 1855, five hours after injury. Long anterior and short posterior flaps, patella and condyles left. Recovery.—*N. Y. Journal of Med.*, Jan. 1856.

CASE 61.—Dr. Halsted, on Aug. 7, 1855, at the N. Y. Hospital, amputated at the knee-joint the leg of A. B., æt. 34, for railroad compound fracture of right leg (also comminuted fracture of left arm). Long anterior and small posterior flap. Died on Aug. 11.—*N. Y. Journal of Medicine*, Jan. 1856. Had for some days previous suffered from delirium tremens. Died apparently worn out by constant convulsive movements.

CASE 62.—In the *N. Y. Journal of Med.*, Nov. 1856, Dr. Markoe reports the case of C. S., æt. 22, whose leg he amputated for chronic inflammation of the knee-joint, Nov. 3, 1855. Long anterior and short posterior flaps; patella removed, and surfaces of condyles sawn off. Recovered with a good sound stump.

CASE 63.—Dr. Markoe, at the N. Y. Hospital, on the 6th of Nov. 1855, removed, at the knee-joint, the leg of a brakeman on the Erie Railroad, æt. 22, which had been crushed between the driving wheel and side of an engine. Long anterior, and short posterior flaps. Patella and condyles left. The patient recovered.

CASE 64.—On Sept. 8, 1852, the leg of John K., æt. 39, which had been

crushed by a log of mahogany, was amputated, at the N. Y. Hospital, at the knee-joint, by flaps. Condyles trimmed. This patient died forty-eight hours after the operation. The case was under the care of Dr. Watson.

In the *Richmond Medical Reporter*, vol. iii., No. 1, p. 55, will be found, in Dr. F. Sorel's statistics, a mention of eleven cases of knee-joint amputation, which were performed by southern surgeons. Five were primary, of which 3 died; and 6 were secondary, all of which died.

The following cases of amputations at the knee, and at the knee-joint, have been recorded in the British medical journals:—

CASE 65.—Mr. Syme reports, in the *Lond. and Ed. Monthly Journ. of Med.* for May, 1845, p. 337, the case of P. P., æt. 21, who suffered from abscess of the knee-joint. On March 2, 1844, Mr. Syme amputated the leg at the knee, making a long posterior flap from the calf, removing the patella, and sawing off the condyles. The patient recovered, and was discharged well on the 31st of May.

CASE 66.—In the same paper Mr. Syme reports the case of Jane M., æt. 22, whose leg he also successfully amputated at the knee for disease of the joint. The operation was similar to the previously described case, except that the anterior skin flap was made on the lower, instead of the upper margin of the patella.—*Am. Journ. of Med. Sci.*, July, 1845, p. 210.

CASES 67, 68.—In the *Lancet* for July 19, 1845, p. 79, and in the *Med. Times and Gaz.*, July 8, 1854, Sir Wm. Fergusson reports two cases of knee amputation for disease of the knee-joint. One of the patients was a man of 24 years of age; the other a boy aged 11. Both patients recovered with excellent stumps. The operation performed by this surgeon was by cutting a short anterior skin-flap, and a long posterior flap from the belly of the gastrocnemius, then sawing off the condyles, and removing the patella.—See *Am. Journ. of Med. Sci.*, Oct. 1854, p. 542.

CASE 69.—Dr. George W. Williamson, Assist. Surg. to the Forces, reports the case of Wm. L., æt. 18, whose leg he removed at the knee-joint for abscess, by Fergusson's process, on Dec. 31, 1845. The stump did not heal, the margin of the femur necrosed, and was sawn off, and the patient died April 3, 1846.

CASE 70.—In the *British Med. Journ.*, April 16, 1864, Mr. Carden reports one case, that of Wm. J., æt. 24, whose leg he disarticulated at the knee, Aug. 19, 1847, for abscess of the knee following fracture of the patella. From the account of this case, the condyles of the femur appear to have been left.

CASE 71.—One case of true amputation at the knee-joint, performed at the Glasgow Infirmary, with a fatal result, is recorded by Mr. Samuel Fenwick, in his *Statistics of Operations Performed at Newcastle-upon-Tyne Infirmary*, published in the *Monthly Journ. of Med. Sci.*, Oct. 1847, p. 248.

CASE 72.—G. M. Jones, Esq., Surgeon to the Jersey Hospital, records, in the *Med. Times and Gaz.*, the case of John S., æt. 35, whose leg he amputated at the knee-joint, for compound fracture of both bones, Nov. 10, 1853. This man recovered with a perfect stump. The operation consisted in a short anterior, and short posterior flap, the removal of the patella, and the articular end of the femur.

CASE 73.—In the *Lancet*, May 27, 1854, Mr. H. G. Potter, of Newcastle, reports the case of Harriet S., æt. 40, whose leg he removed at the knee-joint, by Fergusson's operation, Dec. 13, 1853, for abscess of the joint. The patient was discharged from hospital cured, March 17, 1854.

CASE 74.—Sir Wm. Fergusson reports, in the *Lancet* for Feb. 28, 1857, p. 215, having performed his amputation at the knee successfully on a young lad, Dec. 6, 1856, for necrosis of the tibia and abscess of the knee-joint.

CASES 75, 76, 77.—Mr. Lane, Surgeon to St. Mary's Hospital, London, in the *Lancet* for 1857, vol. ii. p. 324, and p. 474, reports the case of a boy 8 years of age, upon whom he performed disarticulation at the knee-joint on the 16th of Sept., for disease of the tibia involving the joint. The patient recovered. The operation practised by Mr. Lane consisted in the formation of a long anterior, and of a short posterior integumental flap. The patella and condyles were left

undisturbed, and the incrusting cartilages were not touched. In the comments of the British medical press upon this case, it is stated that this operation of Mr. Lane's was the first one of the kind performed in England, although it had been previously performed at Glasgow, in the instance reported by Mr. Fenwick. In the *Lancet* for April 30, 1859, p. 440, Mr. Lane also reports two other cases of the same amputation, one was on the person of a man aged 38, and was performed April 6, 1859, for an epithelial cancer of the leg. The particulars of the other case are not stated. Both occurred at St. Mary's Hospital, in the service of Mr. Lane, and both recovered.

CASE 78.—Sir Wm. Fergusson, in the *Lancet* for April 24, 1858, narrates the case of George H., æt. 20, whose leg he amputated at the knee-joint for a tumour on the right tibia. The operation in this instance was by a long anterior, and short posterior skin flap. The condyles were left, but the patella was removed. The patient recovered.

CASE 79.—The same surgeon reports, in the *Lancet* for Dec. 10, 1859, an amputation at the knee-joint, on a man æt. 48, for medullary cancer of the fibula. The operation was done by anterior and posterior skin flaps. The condyles were left, and the patella was removed. The patient did well at first, but the wound subsequently fell into a sloughy condition, and the man died.

CASE 80.—Mr. Holthouse, at the Westminster Hospital, on Dec. 24, 1858, disarticulated at the knee the leg of H. H., a drayman, æt. 60, for a compound comminuted fracture of the bones of the leg, received ten days previously. Long anterior and short posterior flaps. Patella and condyles left. The patient had suffered from constant oozing of blood from the time of the accident up to date of operation, at which time he was in poor condition. He died from exhaustion.—*Lancet*, April 16, 1859.

CASE 81.—In the *Lancet* for Dec. 10, 1859, is reported a case of Mr. Coulson's, at St. Mary's Hospital, in which amputation was performed at the knee-joint, by Lane's method, for an encephaloid tumour of the right leg, chiefly attached to the tibia. The patient, S. E., a single woman, aged 18, recovered in forty-four days after the operation. Twelve months afterwards she had a good sound stump.

CASE 82.—Mr. Butcher, in his *Conservative Surgery*, p. 457, reports the case of Thomas K., æt. 45, whose leg, Feb. 25, 1860, he amputated at the knee for fracture following disease of the bone. The operation was performed by an anterior integumental and by a posterior long muscular flap. The condyles were sawn with Butcher's saw. The patient recovered with a satisfactory stump.

CASE 83.—In the *British Med. Journ.* for June 15, 1861, Mr. Dolman reports the case of John M., æt. 26, both of whose legs were crushed by a railroad accident. On April 11, 1860, a few hours after the accident, Mr. Fearn amputated the left leg just below the knee. The patient was allowed to recover from the shock, and the right leg was then amputated at the knee-joint by antero-posterior skin flaps. The patella and condyles were left, four ligatures were applied. On April 20 the left femoral artery was tied for secondary hemorrhage. The patient recovered, and, the report states, went up to London for artificial limbs.

CASE 84.—On November 17, 1864, Mr. Pollock amputated at the knee-joint the leg of James H., a wood-sawyer, æt. 51, for ulcer of the leg. Long anterior and short posterior flaps. The condyles and patella were left. This patient recovered with a good stump.—*British Med. Journ.*, 1865, p. 266, and *Lancet*, Jan. 13, 1866.

CASE 85.—In the last-named journal, the case of M. G., a female, æt. 55, half idiotic, is reported as having been operated upon by Mr. Pollock in a similar manner, Aug. 3, 1865, for an extensive ulcer of the left foot and lower half of left leg. She died Aug. 6. The report states that "when admitted into hospital she was in a very low state, and was evidently sinking from exhaustion."

CASE 86.—In the same journal is reported the case of J. S., æt. 12, whose leg was amputated at the knee-joint by Mr. T. Holmes, at St. George's Hospital, Sept. 14, 1865, for abscess of knee-joint. Operation by short anterior and long posterior flap, from muscles of calf. Patella removed, condyles left. Recovered.

CASES 87, 88.—In the *Edinburgh Med. Journ.* for April, 1866, p. 871, Mr. Syme reports the case of W. M., æt. 32, whose leg he amputated at the knee, by Carden's method, for compound fracture of the leg occurring on the railroad January 1. This patient recovered. Mr. Syme also reports a secondary amputation at the knee, by Carden's method, performed upon a boy æt. 6, whose foot he had previously amputated at the ankle, for a railroad injury. The child recovered.

CASE 89.—In the same journal Mr. Syme mentions a secondary amputation at the knee, by Carden's method, performed by Dr. Joseph Bell, Jan. 26, 1866, upon a man, both of whose legs had been fractured on the railroad. One leg was amputated at the knee, and the other was saved. This patient recovered.

CASES 90, 91.—On the 19th of Sept., 1865, Mr. Annandale amputated, at the knee, by Carden's process, both legs of a man, æt. 63, who had been injured by the fall of iron bars a few hours before. The patient recovered, a result unlooked for by the operator.

On Oct. 25, the same surgeon removed successfully, by the same method, the leg of a man for knee-joint disease.

CASE 92.—In the paper already quoted, Mr. Syme records the cases operated upon, secondarily, according to the same method, by Mr. Mackenzie, of Kelso, Oct. 23, 1865. The patient, a young farmer, who had received a compound fracture of the leg from a cart-shaft, made a good recovery with an excellent stump.

CASE 93.—On Feb. 4, 1865, Mr. Hislop, of N. Berwick, removed successfully, by the same process, for disease of the joint, the leg of a clergyman, who recovered with a comfortable stump.

CASE 94.—On Oct. 10, 1865, Mr. Cooper Foster, of Guy's Hospital, amputated, by the circular method at the knee-joint, the leg of a railway laborer, which had been lacerated by a hook attached to a capstan rope. The patella was removed, and the condyles were left. This patient recovered, and was discharged Nov. 18, 1865.—*Lancet*, Jan. 13, 1866.

In the course of his paper Mr. Syme also refers to five cases successfully operated upon, in a similar manner, by Prof. Lister, of Glasgow.

In concluding this summary of the reports of those British cases of knee and knee-joint amputations, which we have collected, it may be well also to append the statistics which have been furnished by Mr. Carden, in the paper already quoted, in the *British Medical Journal*, April 16, 1864. From 1846 to 1864, Mr. Carden performed 30 such amputations, with the following results:—

		Deaths.	Recoveries.
Accidents	Primary 4	1	3
"	Secondary 3	..	3
Advanced cancer	" 6	3	3
Sloughing gangrene	" 1	1	..
Disease	" 16	..	16
	30	5	25

We have subtracted from Mr. Carden's table the amputation at the joint proper, numbered 70 in the foregoing list.

In the following cases, occurring in France, Germany, and Russia, the details are sufficiently accurate for the purposes of our examination:—

CASE 95.—Recorded by Velpeau. On January 14, 1830, M. Velpeau disarticulated at the knee-joint the leg of a boy æt. 19, for necrosis of the tibia. The flap was formed from the integuments in front of the knee. The boy recovered, and wore a peg leg on which he could bear the weight of his body.

CASE 96.—A man, 29 years of age, received a compound fracture of the leg, which was followed by gangrene. On the 4th of June, 1830, M. Velpeau amputated the leg at the knee-joint by a circular operation. This man recovered with a good stump.

CASE 97.—In 1830 M. Velpeau examined the leg of a young man, aged 19, whose leg had been amputated seven years previously at the Hôpital des Enfants. He could walk perfectly well with an artificial limb.

CASE 98.—Bandens reports the case of a soldier wounded at Tafna, Jan. 26, 1836, whose leg he amputated by an anterior integumentary and posterior muscular flap. Portions of both condyles were removed. The wound healed well, making a satisfactory stump.

CASE 99.—The same surgeon also furnishes an account of an operation he performed on a young soldier, wounded April 1, 1836. The limb was removed by the circular method, and the stump proved to be a good one, admitting of the use of a wooden leg.

CASE 100.—M. Murville, of Lille, reports in the *Gazette Med. de Paris* for Nov. 31, 1845, the case of an infant 20 months of age, upon whom he performed amputation at the knee-joint for gangrene following a crush from a carriage-wheel. The case did well, and the stump proved to be an excellent one.

CASE 101.—The same surgeon also describes an operation performed by him upon a man aged 48, whose leg had become gangrenous from excessive inflammation following an injury to the ankle produced by a block of wood. The operation practised was by a short anterior, and long posterior muscular flap. The patella and condyles were left. At the end of sixty-two days the wound had cicatrized perfectly, and he afterwards used a wooden leg with great facility.

CASE 102.—In *Lungenbeck's Archiv* for 1865, 7 Band, Zweiter heft, p. 489, is recorded the case of O. B., æt. 25, a Turk, who received a gunshot fracture of both bones of the leg, in July, 1854. The man underwent a long and exposed wagon-transportation, and the leg fell into bad condition. On January 30, 1855, Dr. J. Mazanowski disarticulated the limb at the knee-joint by Bauden's oval flap. Repeated attacks of secondary hemorrhage supervened, but the patient eventually recovered with an excellent useful stump.

CASE 103.—Operation by M. Maisonneuve. On March 1, 1854, this surgeon, at the Hôpital Cochin, disarticulated at the knee the leg of Augustine Ninot, æt. 22, for osteo-sarcoma of the leg. Twelve days afterwards the femoral artery was tied for secondary hemorrhage. The woman recovered, and was able to walk with agility on an artificial limb.—*Gaz. Méd. de Paris*, Sept. 2, 1854.

CASE 104.—Operation by Arlaud. (*Rour, De l'Ostéomyélite et des Amputations Secondaires*, &c., p. 99. Paris, 1860.) S. D., a French soldier, æt. 23, was wounded at Solferino by a bullet, which fractured both bones of the leg. He was treated conservatively in Italy. Osseous union occurred, with excessive deposit of callus. On November 5, 1859, he was admitted into the Hospital of St. Mandrier. The leg presented fistulous openings, from which frequent exfoliations were removed. The patient was emaciated from excessive pain and continued suffering. As it was evident that the bone was affected, with extensive osteo-myelitis, the limb was amputated at the knee-joint by Bauden's oval operation December 19. On January 5 a large abscess formed in the thigh, which was opened. He then recovered rapidly, and was discharged from hospital February 25, perfectly cured, and furnished with a wooden leg, which permitted him to walk with facility.

CASES 105 to 114.—In the published statistics of the Surgical Clinic at Tübingen, from 1843 to 1863, p. 30, Stuttgart, 1863, Dr. Hermann Schmidt reports ten cases of amputation at the knee-joint. Of these, six recovered, and four died. Two of the deaths were from pyæmia. In both of these cases the condyles were removed. One death resulted from hemorrhage, and one from exhaustion. In two instances, the patella was excised. The indications for the amputation were, in four cases, caries or necrosis of the tibia; in four cases, ulcer of the leg; and in two cases, gangrene. The operation by the single anterior flap was performed seven times; the circular operation once; and the posterior muscular flap method once. The stumps of the cases which recovered seem to have been satisfactory. The reporter, however, prefers amputation in the con-

tinuity of the thigh to that of the knee, since the Tübingen statistics of the former operation present a less degree of mortality than the latter, which was forty per cent.

CASES 115 to 120.—In *Canstatt's Archiv* for 1857, p. 218, Dr. J. T. Heyfelder briefly refers to six cases in which he had performed amputation at the knee-joint. Two cases of this operation for compound fracture of the bones of the leg, died respectively about the tenth and twenty-fifth day, from pyæmia. Two other cases operated upon for caries of the leg bones also died from the same cause. One patient upon whom he had performed Hoin's posterior muscular flap operation died on the fourth day from pyæmia, probably caused, as the operator observes, by excessive suppuration from so large a muscular flap.

One other case, injured by an explosion, and operated upon by Bauden's method, recovered with a good stump, and at the end of five months was able to perform field work.

*List of Cases of Disarticulation at the Knee, not included in the
Tabulations of this Article.*

	Reco- veries.	Deaths.		Reco- veries.	Deaths.
De la Roque, 1773	1		Langenbeck	1	1
J. L. Petit, 1773	2		Textor, the elder	4	2
Hoin, in Lyons, 1764 . . .	1		Beclard, 1823	1	
Gignoux, of Valence (spontane- aneous)	1		Ph. von Walther	...	1
Sabatier (spontaneous) . .	1		Robert	1	
Richerand	1		Bruns, in Tübingen . . .	2	1
Deziemeris	1		Munster, in Copenhagen .	1	
Bourgeois, at Etampes . .	1		Schuh, in Vienna	...	1
Rossi	2		Textor, the younger . . .	1	
Nivert	1		Zeis, in Marburg, 1830 . .	1	
Laugier	...	2	Gunther, in Leipzig . . .	...	1
Velpeau ¹	...	4	J. L. Petit, 1774	1	
Bauden's	1	2	Larrey, in the year 3 . . .	1	
Piehozel ²	1		Coste, of Marseilles ⁵ . .	1	1
Jobert ³	...	1	J. Heyfelder ⁶	1	5
Thos. Volpi ²	2	1	Vanzetti ⁶	1	
Scrive, in Africa ²	...	1	Uhde ⁷	3	2
Gerdy ¹	...	1	Salleron, at Dohme-Bagat- ché, Constantinople for gunshot injuries ⁷ . . .	1	11
Guyon ²	...	1	Maupin, secondary amputa- tions for gunshot injuries ⁷	...	5
Dupuytren ³	...	3			
Monteggia ³	...	1			
Wrabiez, in Vienna ⁴ . . .	1				
Kern	2	3	Total	40	33

In endeavouring to arrive at a correct estimate of the value of amputation at the knee-joint, it is well to regard the operation from a twofold

¹ For the cases referred to under the first twelve names, see Velpeau, *Op. Surg.*, N. Y., 1856, p. 239.

² Ollagnier, *Gaz. Méd. de Paris*, 1849, p. 84 et seq.

³ N. Y. *Journ. of Med.*, Nov. 1852, p. 324.

⁴ For this and the cases referred to under the succeeding fourteen names, see Günther, *Blütige Operatione*, Leipzig, 1855, facie. 13, p. 109.

⁵ Canstatt, *Jahresbericht*, 1857, p. 219.

⁶ Langenbeck's *Archiv*, 1865, Bd. 7, Heft. 2, p. 493.

⁷ Uhde, *die abnahme des vorderarms*, Braunschweig, 1865, p. 134.

point of view—*first*, as to the fatality of the operation especially as compared with amputation of the thigh ; *second*, as to the character and utility of the resulting stump.

First. As to the fatality of amputation at the knee-joint. In determining this question we must refer to the statistics of the published cases. Unfortunately, it happens, that the number of reported operations is but limited, and if we except the papers of Velpeau, Stephen Smith, Markoe, Zeis, Ollagnier, Mazanowski, and a few others, we find little except the mention of an occasional operation. Indeed, a careful analysis of some of the most frequently quoted tables of knee-joint amputation leads to the conclusion, that many of the reported cases rest upon mere hearsay evidence, and are more than apocryphal. There is such evident duplication of cases, and absence of details, as to forbid the use of these tables as a basis for correct surgical deductions.

In collecting the cases cited in the preceding pages, the writer has admitted only such as bore the stamp of authenticity. All doubtful ones, and those wanting in description, have been excluded from the tabulations, but for the sake of reference they are appended in a supplementary list.

The tables, upon which the deductions of this paper are based, comprehend, it will be seen, the writer's own cases ; other unreported American cases, obtained from manuscript sources ; the published cases collected by Drs. Smith and Markoe ; and well-authenticated published European operations. For purposes of comparison, the results of American and foreign practice are arrayed in separate summaries.

Summary of the Results of American Cases of Amputation at the Knee-joint.

		Cause.	Cases.	Recoveries.	Deaths.
Primary	Condyles left ; patella left	Accident	15	11	4
Secondary	“ “ “ “	“	15	9	6
“	“ “ “ “	Disease	12	10	2
“	“ “ “ removed	“	1	1	
Primary	Articular surfaces of condyles shaven off ; patella left	Accident	2	1	1
Secondary	Articular surfaces of condyles shaven off ; patella left	“	2	2	
Primary	Condyles sawn off ; patella left	“	7	4	3
Secondary	“ “ “ “	“	3	2	1
“	“ “ “ “	Disease	3	3	
“	“ “ “ removed	“	2	1	1
	Cause and period of operation undetermined		2	2	
Total number of cases			64	46	18

	Cases.	Reco- veries.	Deaths.	Percent. of mortality.
Primary amputations after accident . .	24	16	8	33.33
Secondary amputations after accident . .	20	13	7	35.
Secondary amputations for disease . . .	18	15	3	16.66
Cause and period of amputation undetermined	2	2		
Total . . .	64	46	18	28

Summary of the Results of Foreign Cases of Amputation at the Knee-joint.¹

		Cause.	Cases.	Reco- veries.	Deaths
Primary	Condyles left; patella left . . .	Accident	7	4	3
"	" " " removed . . .	"	1	1	
Secondary	" " " left . . .	"	5	4	1
"	" " " " . . .	Disease	13	10	3
"	" " " removed . . .	"	8	5	3
Primary	Articular surfaces of condyles shaven off; patella left . . .	Accident	1	1	
Secondary	Articular surfaces of condyles shaven off; patella left . . .	"	1	1	
"	Articular surfaces of condyles shaven off; patella left . . .	Disease	1	1	
"	Articular surfaces of condyles shaven off; patella removed . . .	"	1	1	
"	Condyles sawn off; patella left . . .	"	3	1	2
"	" " " " removed . . .	"	6	5	1
Total cases . . .			47	34	13

	Cases.	Reco- veries.	Deaths.	Percent. of mortality.
Primary amputations after accident . . .	9	6	3	33.33
Secondary amputations after accident . . .	6	5	1	16.66
Secondary amputations for disease . . .	32	23	9	28.75
Total . . .	47	34	13	27.65

*Table showing the Aggregate Results of American and Foreign Amputations at the Knee-joint. **

	Cases.	Reco- veries.	Deaths.	Percent. of mortality.
Primary amputations after accident . . .	33	22	11	33.33
Secondary amputations after accident . . .	26	18	8	30.77
Secondary amputations after disease . . .	50	38	12	24.
Cause and period of amputation undetermined	2	2		
Total number of cases . . .	111	80	31	27.92

¹ All amputations performed according to Mr. Carden's method have been excluded from this table.

Table showing the Mortality attendant upon the Retention or Removal of the Condyles of the Femur in Amputation at the Knee-joint.

Condyles left.	Cases.	Reco- veries.	Deaths.	Percent. of mortality.
American cases	45	33	12	26.66
Foreign cases	34	24	10	29.40
	79	57	22	27.84

Condyles removed.	Cases.	Reco- veries.	Deaths.	Percent. of mortality.
American cases	19	13	6	31.57
Foreign cases	13	10	3	23.
	32	23	9	28.12

The tables of the American operations embrace, it will be seen, 64 cases; of these 18 died, a mortality of 28 per cent. In 45 cases the condyles of the femur were not removed; of these 12 died, a death rate of 26.66. In 19 cases the condyles were sawn off to a greater or less extent; the mortality then being 31.57 per cent. In contrast with these figures the results of European practice would appear to be, a general death rate in 47 cases, of 27.65; for 34 cases in which the condyles were left, a mortality of 29.40; and in 13 cases in which they were removed, 23 per cent.

The rate of mortality for the aggregate American and European cases, 111 in number, is a little less than 28 per cent.; for 79 cases in which the condyles were left, 27.84; and in 32 cases in which they were removed, 28.12 per cent.

The mortality attendant upon 33 primary knee amputations after accident is 33.33 per cent.; upon 26 secondary amputations after accident, 30.77 per cent.; and upon 50 amputations for disease, 24 per cent.

From these data, it would seem that the mortality of amputation at the knee-joint is about 28 per cent. Pure disarticulation, in which the condyles and patella are left undisturbed, appears to be rather more favourable than disarticulation accompanied by ablation of these parts.

From the most recent statistics of the Surgeon General's Office, presented on a preceding page, the general average mortality of all cases of amputation at the knee-joint occurring in military practice during the rebellion, and reported to the Bureau, was about 50 per cent.

If we compare the mortality rate of amputation at the knee-joint with that attendant upon thigh amputation, the difference in favour of the former is most striking. By Mr. Syme the latter is set down at from 50 to 70 per cent. The statistics of M. Malgaigne, for the same operation in the Paris hospitals from 1836 to 1841, showed a mortality of 62.6 per cent.

Trelat's statistics, for the same hospitals from 1850 to 1861, give a death rate of 52.7 per cent. Dr. Gross, in his *Treatise on Surgery*, gives a mortality rate of 41.4 for 164 amputations in continuity of the thigh performed in American hospitals. For 194 amputations of the leg the same author states the death rate to be 35 per cent.

In view of the mortality incident to amputations of the leg and thigh, the question naturally arises, why is it that amputation through the knee, an intermediate point, is attended with comparatively less risk? This probably is owing :—

1. To the diminished shock of operation, which has always appeared to be a marked feature of this amputation. There is scarcely any operation of corresponding gravity, and certainly no major amputation, which is accompanied by so little—whether this be owing to the circumstance, that in this disarticulation as now generally practised by skin flaps, there is so little section of muscular tissue; or to the fact that the shaft of the thigh bone is not sawn across, or to both, is not clear. But it is undoubtedly true, that the shock in this amputation is disproportionately less than that of any other in its vicinity. In the writer's practice, this has more than once been regarded as a strong indication for the performance of the disarticulation.

2. To the nature of the tissues involved. If the disarticulation of the knee be practised by the circular process of Velpeau, the oval one of Baudens, or by the formation of antero-posterior or of lateral skin flaps, excessive incision and exposure of the muscular tissues is avoided. The suppurating surface is thus reduced to a minimum amount, and the chances of death from exhaustion are thus proportionately decreased.

3. To the fact, that in the disarticulation at the joint, and in the amputation through the cancellated structure of the femur, the shaft of the femur is not sawn across. Perhaps one of the most frequent causes of death after amputation in continuity in the lower extremity is pyæmic poisoning, so often the result of osteo-myelitis. The experience of our army surgeons in the late rebellion has, we think, shown this conclusively. The writer's observation in military practice has impressed him with the conviction that in all amputations in continuity, the patient's immunity from inflammation and disintegration of the medullary structures of the bones, is greatly influenced by the point at which the saw is applied. The nearer to the centre of the bone this is done the greater, probably, will be the chances of osteo-myelitis, and its disastrous sequelæ. A section of the bone through the cancellated structure or section through the epiphysis may, therefore, be regarded as less threatening to the life of a patient, all other circumstances being equal. This view appears all the more probable when it is remembered that the medullary canal exists only in the shaft of the bone, at the centre of which its diameter is greatest, and that it disappears as it approaches the epiphysis.

Dr. Markoe has already pointed out the liability of the femur to the formation of long tubular sequestra when its medullary canal has been opened, a remark which reference to the shelves of our different museums, and especially to that of the Army Medical Museum, will abundantly corroborate.

Danger of Amputation at the Knee-Joint.—Apart from the shock of operation, and the risks attendant upon all amputations, one or two points deserve especial notice in connection with knee amputations. The first of these is the occurrence of synovial inflammation, an event which seems to have been, and which still is feared by some. But, in reality, this is but an imaginary peril, for, as Dr. Stephen Smith has justly observed, “dangerous consequences from this source are rare exceptions in the severer wound of bisection of this articulation in amputation.”

In none of the cases, which came under the writer's observation, have any unpleasant consequences been developed which could be charged to this cause. Indeed, it is not easy to see how they can occur, when it is remembered that the articulation is destroyed by the very performance of the operation, and also that in the course of a few days all traces of the synovial membrane disappear.

There is, however, one condition often encountered after knee amputations which does not seem to have met with the attention its gravity demands, save at the pens of some of the German writers. We refer to inflammation of the tendinous sheaths of the biceps, sartorius, semimembranosus, semitendinosus, and gracilis muscles. The invasion of this inflammation usually takes place from the second to the fifth day after the operation, and is attended by great swelling, tenderness on pressure, and pain in the stump, with considerable constitutional irritation. The stump assumes a bulbous appearance, and the progress of the inflammation is rapid and tends to suppuration. In those cases which the writer has observed, the biceps tendon was most often and earliest attacked. Occasionally the bursa over the patella became involved. The only treatment consists in early and free evacuations of these abscesses, otherwise extensive burrowing may occur, and the patient sink from pyæmia and exhaustion.

The *healing process* after amputation at the knee-joint may, under favourable circumstances, take place almost by first intention. This occurred in Case II., operated upon by the writer. When this happens the integuments covering the end of the femur are usually loose and movable, and the stump is best fitted to sustain pressure. Most frequently, however, only a partial direct union of the flap takes place, and here and there patches of slough separate from their edges. These sloughs leave the articular cartilage uncovered, and in several instances the writer has been enabled to study the process by which the cartilage loosens from the bone. Sometimes it softens, assumes a grayish appearance, and disappears,

as it were, molecularly, gradually thinning; its particles being pushed off by the granulations from beneath, and washed away in the discharges.

About the eleventh or twelfth day after the operation, the vessels on the end of the bone beneath the softening cartilage become visible, and generally by about the twentieth day, the cartilage has entirely disappeared—at the same time the granulations from the bone spring up rapidly, and coalesce with those growing from the marginal surfaces, and from the crucial ligaments and soft tissues of the inter-condyloid notch. In other instances, on about the eighteenth or twentieth day, the softened articular cartilage separates in a thick layer from the subjacent bone, and can be readily removed in bulk with the forceps. The granulating process then takes place as already described. The growth of these granulations from the surface of the bone is usually so rapid that by the twenty-sixth or eighth day they reach the level of the surrounding soft tissues.

Operative process.—The main indication in the disarticulation of the knee is to obtain a sufficient amount of integumental covering to admit of the lips of the wound being brought together without strain. Whether this be accomplished by the circular or oval method, or by the formation of lateral, or of antero-posterior flaps, matters but little. The writer's experience inclines him to give the preference to the latter procedure. The anterior flap should, if possible, be cut long, so as to rest smoothly and loosely over the articular end of the femur. The cicatrix will then be out of the line of pressure on the application of an artificial limb.

The lateral flap method, first used by Rossi, has in the hands of some operators given satisfaction. It is well spoken of by Dr. D. P. Smith, late surgeon U. S. Vols., whose experience in regard to this operation has been considerable, and it has recently been employed by Dr. Stephen Smith in case 37, herewith reported. From his own observations the writer has thought, that in the lateral flap method the condyles are less liable to remain satisfactorily covered, and are more apt to project should any sloughing of the margins of the flaps occur, which probably happens to a greater or less extent in nearly all cases. Should sloughing take place after either of the other methods, the portion of bone uncovered is usually upon the posterior surface of the stump, a position of less importance than those exposed by the retraction or loss of any part of the lateral flaps.

One advantage the bilateral flaps unquestionably offer, and that is a dependent drainage for the wound. The importance of free drainage after disarticulation of the knee cannot be too strongly insisted upon, and no matter what operative process may be employed, it is clearly the surgeon's duty to see that a free vent is at all times afforded to the fluids collected under the coverings of the flap. Neglect of this precaution has to the writer's certain knowledge in more than one instance threatened a patient's life.

The formation of a posterior flap from the muscular tissues of the calf does not appear to have proved very successful in practice. It was abandoned by Mr. Syme, on account of the increased shock of the muscular section, the awkward fitting of the flap, the exhaustive suppuration, and the greatly increased risk of secondary hemorrhage.

The *Secondary Hemorrhage*, which follows amputation at the knee-joint is peculiar in its character, and deserves a careful consideration. It usually makes its appearance after reaction has been fairly brought about, and when the collateral circulation of the vessels of the stump is well established. The bleeding begins insidiously, and appearing at first to be passive in its character, does not excite apprehension. It is usually however obstinate, and there is a constant oozing from the wound. This it is difficult to arrest except by pressure over the main trunk, and when checked it is apt to recur at short intervals, on the removal of the pressure.

This hemorrhage which the writer on several occasions has had the opportunity of studying, takes place from the divided extremities of the articular vessels, especially of the azygos and inferior articular arteries, which are more particularly distributed to those internal structures divided in the section of the joint; these vessels, too small at the moment of operation to attract attention, subsequently enlarge and give rise to hemorrhage, which becomes serious from its continuance.

This circumstance appears to the writer of sufficient moment to be considered in the selection of the method of operation, which should be so conducted that the popliteal artery may be divided squarely across on the line of the articulation, and above the point at which the middle and lower articular arteries are given off. Such a result cannot of course be obtained in the performance of the amputation by the posterior muscular flap, for here the vitality of the large portion of the gastrocnemial muscle included in the flap, must to a great degree depend upon the integrity of the sural arteries. But as it is probable that these latter cannot be preserved, except at the risk of secondary bleeding from the joint structures, supplied by the articular arteries at higher points of origin from the popliteal, an additional reason is offered for the rejection of this mode of operation.

Another source of hemorrhage is the popliteal vein, which, when divided, is apt to gape, and unless tied may bleed to a considerable extent. This patency of the vein may be due to the firmness of the tissues in which it is imbedded, its many branches, and perhaps, also, as pointed out by Mr. Carden, to the disturbing pulsation of the neighbouring popliteal artery. In performing this amputation the writer has been in the habit of ligating the vein, and in no instance has any ill effect been observed.

The second point to be considered, is the *value of the stump* obtained after amputation at the knee-joint. Upon this subject patients, surgeons, and surgical mechanics are agreed. Their testimony is nearly unanimous as to the serviceability of the stump, and its fitness for the adapta-

tion of an artificial limb. In all of the operations, which have come within the writer's observation, the result in this respect has been favourable. There is seldom any tenderness on pressure, the patient generally bears his weight freely upon the end of the stump and can use an artificial limb with ease and comfort. The degree of motion preserved by the stump is wonderfully great, especially the power of rotation. In all of these cases the advantage of preserving the tendinous insertion of the adductor magnus muscle is manifest, and its effect in increasing the firmness of the patient's gait in walking is very marked. After the lapse of a year or two, and often much sooner, the condyles of the femur undergo considerable changes. They become smaller, rounder, and smoother, and, in fact, the end of the thigh bone assumes the same characteristics it would have possessed had the articular surfaces and condyloid projections been sawn off.

The writer has been informed by Mr. Palmer, the manufacturer of artificial limbs, that from a mechanical point of view he considers a good knee stump to be better suited for the adjustment of an artificial limb, than a good thigh stump. He also states that even though a slight degree of tenderness exist upon the surface of the stump after disarticulation at the knee, the artificial limb can be so applied by means of lacings as to sustain the weight of the body without permitting any pressure to be received upon the sensitive end of the stump.

It will be observed that in the present article no attempt has been made to consider in detail the indications for the performance of amputation through the knee. In general terms it may be stated that the operation can be resorted to with propriety, in many of those cases of injury and disease, which have hitherto demanded amputation through the lower third of the thigh; *provided* the integuments of the knee are sufficiently healthy to furnish material for flaps and *provided* also that the condyles of the femur are not involved to too great an extent.

Thus, amputation at the knee-joint might be performed:—

1. In crushed and compound fractures of the bones of the leg, extending up to, or involving the knee-joint.
2. In gunshot fractures of the bones of the leg, in the vicinity of, or involving the knee-joint.
3. In gunshot wounds of the knee-joint.
4. In gangrene of the leg, the result of injury to the great vessels or nerves.
5. In chronic and irreparable disease of the bones, or for tumours of the leg.
6. In degeneration, and abscess of the knee-joint.

PHILADELPHIA, February 10th, 1868.

ART. II.—*Tumours of the Brain: Clinical History and Comments.*

By ROBERTS BARTHOLOW, M.D., Professor of Materia Medica and Therapeutics in the Medical College of Ohio; Lecturer on Clinical Medicine, and Physician to the Hospital of the Good Samaritan; Lecturer on Morbid Anatomy, and Pathologist to the Commercial Hospital of Cincinnati, &c.

THREE cases of tumour of the brain have come under my charge in the wards of the Hospital of the Good Samaritan, during the past year; unfortunately, one only could be followed to its termination, and the diagnosis verified by an autopsical examination. The symptoms in the other cases, however, were so characteristic as to leave no room for doubt. The large number of observations which have been accumulated, the recent advances made in our knowledge of the physiology of the brain, and the improved methods available for investigation, have greatly increased the facility and certainty of diagnosis. Although, in view of what has been accomplished, the cases here narrated may not possess the merit of novelty, they will serve as centres about which the best ascertained facts may be grouped. They will illustrate, also, whatever of certainty and uncertainty exists in the diagnosis of this class of cerebral affections. Careful study of the symptomatology of cerebral tumours will contribute to our knowledge of the functions of the brain—for these growths, in many instances, impinge upon or destroy parts without affecting neighbouring organs, more perfectly than can be accomplished by the knife of the experimental physiologist. On the other hand, as the brain is a compound organ, made up of many different parts having different functions, a tumour involving one or more of these parts will be accompanied by symptoms correspondingly diverse. Any case, therefore, carefully reported, especially if verified by autopsical inspection, must possess a certain value not only for the student of physiology, but also for the practical physician.

CASE I.—Tim, an Irishman, aged about forty, of light complexion and full habit. Admitted September, 1866. He had had, for several months, a persistent headache, accompanied with “swimming in the head,” and difficulty of locomotion. He referred the origin of these symptoms to that not unusual Irish accident, sunstroke—(epileptic seizure?)

Symptoms on Admission.—When brought into the ward he is supposed by the attendants to be intoxicated. His gait is staggering; he is noisy and talkative; and his face has a bloated, dissipated appearance. When an attendant leads him forward, he manifests a strong tendency to backward movements; he throws his head and shoulders backward, and moves his legs forward only as compelled by the forward propulsion; when the force propelling him is withdrawn, he tends backward by rapid steps, and would fall supine if not arrested. An evident degree of ataxia exists; his gait is hesitating, somewhat like that observed in progressive locomotor ataxia, and he manifests a great fear of falling. When moved

to and fro by the attendants, he becomes angry and noisy; but his good humour returns with his sense of security when seated in a chair.

His eyes are prominent and staring; pupils dilated, and responding slowly to the stimulus of light. It is ascertained that vision is dim (amblyopia). Hearing is obtuse, which he attributes to *tinnitus aurium*. He complains of severe attacks of cephalalgia, which he refers chiefly to the occiput. Sensibility is somewhat heightened in the distribution of the fifth pair. There is decided paresis of the facial, which gives to his countenance its blank and expressionless character. So far as can be ascertained there is no alteration of the sense of taste. The tongue is not impaired in any of its movements; he talks volubly in a voice pitched in a high key. Much of his conversation is in reference to the illusions produced by his disorder of vision, but he reasons correctly on all subjects which he can consider subjectively.

Progress of the Case.—But slight changes were noted from week to week. His perception of light gradually diminished. Some congestion of the conjunctivæ appeared; the pupils continued dilated, sluggish in movement, and finally ceased to respond to the stimulus of light (amaurosis). The peculiarities in his locomotion noted at the time of his admission, continued. The hyperæsthesia of the fifth and the paresis of the seventh, increased slowly. In eating, which he did voraciously, he was unable to maintain control of the food, a portion of which, in spite of all his efforts, escaping from his mouth. Deglutition continued unaffected. Respiration, sanguification, and calorification were normally performed.

As the case progressed his mind became enfeebled. He grew more noisy and quarrelsome, and had paroxysms of fury which rendered it necessary to confine him. His fits of fury subsided, generally, when he was left alone. During the whole period of his stay in the hospital he had no convulsions, no vomiting. The tendency to backward movement became much more decided at the last, so that it was difficult to move him forward. A part of this peculiar movement seemed to be due to his blindness and a fear of falling. When compelled to move he manifested considerable terror. This was particularly observable when brought into the lecture-room in presence of the class.

It is much to be regretted that no ophthalmoscopic examination of his eyes was made. There can be no doubt, however, that they were in the condition observed in the case next to be related.

After a stay of three months in the hospital, Tim was transferred to the County Infirmary, and all trace of him became lost.

Commentary.—The symptoms in this case—the pain in the head, the vertigo, the impairment of vision, the hyperæsthesia of the fifth, the paresis of the seventh, the attacks of fury, the illusions, the disorders of locomotion, and, finally, the progressive feebleness of the intellectual faculties—indicate a lesion of the encephalon. In making up the differential diagnosis, we may at once exclude all acute affections of the organs within the cranium.

It is not a case of progressive paralysis. The first symptoms of this disease are paralysis of the tongue, muscular feebleness and paralysis, impaired intellectual power,¹ &c. Our patient, Tim, presented none of

¹ Calmeil, *De la Paralyse considérée chez les aliénés*, &c., p. 10 et seq. Paris, 1826.

these symptoms except impairment of intellection; which, however, came on late in the progress of his case. He had neither paralysis of the tongue nor of any of the voluntary muscles except those supplied by the facial. A very marked distinction exists between defects of co-ordination and backward movements, and muscular paralysis.

It is not a case of senile dementia. In an immense majority of cases, says Marcé,¹ senile dementia takes its origin in an attack of apoplexy, acute softening, or softening of a chronic and progressive form. Paralysis, hemiplegia, or general paralysis, is an attendant symptom in all these cases.

It is not a case of progressive locomotor ataxia. The case of Tim agrees with this disorder as respects the difficulty of co-ordination, and the occurrence of certain ocular derangements. But there are well-marked points of difference. In ataxia, pains in the extremities presumed to be rheumatic, numbness, tingling, and various referred sensations precede the disorder of co-ordination. The ataxia, of the progressive locomotor ataxia, is very different in character from that observed in Tim's case, and is not accompanied by the tendency to backward movements. Moreover, the phenomena of cerebral congestion, the attacks of fury, the hyperæsthesia of the fifth and the paresis of the seventh, and the intellectual derangement, are very different symptoms from those observed in progressive locomotor ataxia.

In coming to a conclusion as to the seat of the lesion in this case, we are aided by the facts of experimental physiology and of pathological anatomy.

Flourens, in 1822, as the result of his vivisections, concluded that the cerebellum is the exclusive seat of the power to co-ordinate muscular movements. Magendie, Longet, and various experimental physiologists, arrived at the same conclusion. Magendie, however, advanced a point beyond this. He demonstrated that the cerebellum presided over the forward movements, and that the corpora striata exercised a similar office for the backward movements. When he ablated the cerebellum, the animal experimented on manifested a strong tendency to backward movements; and when he ablated the corpora striata, to violent forward movements. These conclusions of Magendie, a long time disputed, have been confirmed in a striking manner by two able physiologists experimenting in the same direction, by the same means, and at the same time, in different hemispheres. I allude to the investigations of Drs. Mitchell² of Philadelphia, and Richardson, of London.³ These gentlemen succeeded in abolishing, for

¹ Recherches Cliniques et Anatomo-Pathologiques sur la Démence Sénile et sur les Différences qui la Séparent de la Paralyse Générale. Paris, 1863.

² American Journal of the Medical Sciences, January, 1867.

³ Medical Times and Gazette, May 25, 1867. The priority in these investigations clearly rests with our countryman, Dr. Mitchell.

the time being, the functions of certain portions of the encephalon by freezing them with rhigolene and ether spray. They both ascertained that suppression of the functions of the cerebellum by freezing produced backward movements. In Richardson's language, "The animal, without the cerebellum, shows evidence of backward movements; which means that the controlling or compensating power of the cerebellum being cut off, that part of the cerebral organism which commands backward movement is allowed undue play, and overcomes volition or will." In another place he expresses the same idea in different language: "When we see, therefore, an animal fall backwards because its cerebellar functions are positively in abeyance, we see the action of the great anterior cerebral ganglia. Conversely, when we see an animal pitch forward because the cerebrum is rendered inert, we see in play the unchecked forward propulsion of the cerebellum."

These demonstrations are very conclusive, but the facts of pathological anatomy are equally so.

Various cases of affection of the cerebellum have been published, proving that lesion of this organ is accompanied by the peculiar symptoms manifested in this case. Topinard¹ has made an interesting collection of twenty-four cases showing the production of ataxic phenomena in cerebellar affections. Abercrombie² gives an interesting account of a tumour of the cerebellum, in which case "the walk was tremulous and unsteady, like a person balancing a burden on the head."

Lallemand³ gives, in his remarkable collection of cases, various instances of encysted abscess, of softening, and of tumour of the cerebellum, in which these affections produced uncertain and difficult locomotion, cephalalgia, amaurosis—and, indeed, all of the phenomena observed in the cases here reported. In addition to these, but including many of the cases reported by Lallemand, Abercrombie, and Topinard, Luys⁴ has collected one hundred cases of disease of the cerebellum, the history and symptomatology of which agree with my own.

I am prepared, then, to state, that in the case narrated in this paper, there existed a chronic affection of the cerebellum. What was the character of the lesion? Not to anticipate the discussion to follow, it may be stated that the history and symptomatology correspond to those which have been observed in cases of *tumour of the brain*. Was the lesion con-

¹ De l'Ataxie Locomotrice et en particulier de la Maladie appelée Ataxie Locomotrice Progressive. Chap. II., art. Premier. Paris, 1864.

² Diseases of the Brain and Spinal Cord. Edinburgh, 1836.

³ Recherches Anatomico-Pathologiques sur l'Encéphale et ses Dependances. Paris, 1826-30. Consult especially the fourth and fifth letters.

⁴ Études sur l'Anatomie, la Physiologie et la Pathologie du Cervelet; par J. Luys, Médecine des Hôpitaux de Paris. Archives Générales de Médecine, for October, November, and December, 1864.

fined to the cerebellum? It is quite evident that the facial and auditory nerves were somewhat interfered with. There was neither convergent nor divergent strabismus; vomiting had not occurred. These facts sufficiently indicate that, so long as the patient remained under my observation, the tumour extended but little beyond the boundary of the cerebellum.

CASE II.—I. M. H., aged 43, a native of the United States, by occupation a ship-carpenter. He is 6 feet in height, of dark complexion, and weighs 152 pounds. Previously to the development of the trouble for the relief of which he has sought admission to the hospital, H. has had no other illness than two attacks of acute rheumatism. There is no history of hereditary nervous diseases in his family.

History of the Case.—H. experienced the first symptom of his present disorder sixteen months ago. The attack commenced with headache, nausea and vomiting, pains in the back, extending forwards anteriorly over the right and left inguinal regions and to the glans penis. The pains in the head were severe, but intermittent, and could be relieved by the application of warmth. He vomited frequently during the day, without much effort, and with little action of the abdominal muscles. The loss of flesh which he experienced appeared to be the result of this interference with the primary assimilation. Soon after the foregoing symptoms manifested themselves, H. began to experience disorders of locomotion, and so marked were they that he was accused by his neighbours of intoxication. Physicians whom he consulted called his case "partial paralysis;" a seton was inserted in his neck, and tonics administered. He was admitted to the Hospital of the Good Samaritan November 8, 1867.

Symptoms on Admission.—H. has a countenance of uneasiness and distress difficult to describe. The right palpebral opening being wider than the left, imparts a peculiar expression to his face. His speech is thick and stuttering, but his tongue is protruded without difficulty, and does not deviate to either side. The operations of his mind seem normal, but a friend who accompanied him to the hospital reports that some deficiencies of intellect and peculiarities of conduct have been observed lately. He complains of pain in the forehead and occiput of a neuralgic character, and of attacks of giddiness. At night he is restless, talking in his sleep, and occasionally getting out of bed in a somnambulistic state, walking a few steps, when he falls and awakes. The special senses of smell and taste seem to be unaffected. He hears with the left ear, but is totally deaf in the right. His vision is dim and uncertain. The movements of the ocular globes, particularly the right, are decidedly ataxic (bilateral nystagmus). Prof. Seeley, ophthalmologist to the hospital, thus describes the ophthalmoscopic appearances: "Size of pupils normal. Reflex and accommodative movements normal. Ophthalmoscope reveals congestion of both papillæ, evidenced by the deep pinkish tint, caused by the development of a large number of capillaries, and entire want of definition of papillæ, except a portion of external border. In addition, there is slight exudation along the track of some of the vessels on right papillæ. Veins and arteries of both retinæ enlarged. No hemorrhage along their course."

H.'s appetite is rather poor. He has frequent attacks of regurgitation of food. His bowels are constipated. There is found to be a difference of $1\frac{3}{4}^{\circ}$ F. in his morning and evening temperature. The most striking

¹ Reported by Dr. T. C. Minor, Resident Physician.

symptom is the ataxia in the muscles of the extremities, especially of the right. He cannot stand alone, with his eyes closed. He cannot touch the point of his nose with his right index-finger, unless he guides the hand by his eyes. His walk is staggering and uncertain, very much like that of an intoxicated man. He does not point his toes upward in walking, and bring his heels with violence upon the floor. His muscular strength is preserved. When his leg is flexed upon the thigh, no inconsiderable force is required to extend it. His grasp is as strong as in health. Cutaneous sensibility is rather heightened than diminished; at least this observation is true with respect to sensibility to pain. Sensibility to cold, to heat, and to pressure unaffected. He has no numbness, tingling, or referred sensations in either extremities.

H. remained in the hospital but a few days. Dissatisfied that a cure was not promised him, he left under a pretence of a visit to his family, and did not return.

Commentary.—We have here a disorder which interferes with the power of co-ordinating muscular movements. This fact is exhibited in the ataxic movements of the eyes, of the tongue, and of the muscles of the right lateral half of the body. The malady with which it would be most readily confounded is progressive locomotor ataxia. In this disease, however, cutaneous and muscular anæsthesia, numbness, tingling, and characteristic pains precede and accompany the disorders of locomotion.

A case presenting many points of resemblance has been published by Dr. F. Bateman,¹ physician to the Norfolk and Norwich Hospital. The patient had first shaking of the right hand, which was followed by frontal headache, weakness of legs, and a staggering gait, as if intoxicated. Next embarrassment of speech came on, then dimness of vision, and finally complete blindness, the right eye being the first affected. The order and character of the symptoms are, it will be perceived, almost identical with those which occurred in H.'s case. At the autopsy a steatomatous tumour, the size of a hen's egg, was found "adherent to and apparently springing from the posterior surface of the petrous portion of the right temporal and from the basilar process of the occipital bones." It encroached upon the under surface of the right lobe of the cerebellum, the right side of the medulla oblongata, the right crus cerebelli, and the right side of the pons Varolii in its whole extent.

In my clinical lecture upon the man H., I assigned the supposed neoplasm to a similar position.

CASE III.—T. F., an Irish coachman, admitted to the Hospital of the Good Samaritan during the month of October, 1866.

Symptoms on Admission.—His countenance presents an aspect of suffering; he has violent pains throughout the distribution of the left trigeminus; the left eye is suffused and congested, pupil dilated; the left side of the face is swelled, reddened, and excessively sensitive.

His intellectual acts are normally performed. He describes his sensations

¹ Beale's Archives of Medicine, April 16, 1867.

with accuracy, and talks rationally on any subject within the range of his acquirements. He ascribes his sensations to sunstroke received during the month of July. Since the time of this supposed attack he has suffered more or less from headache, but especially from the pain in the left side of the face. Reflecting over his history, aided by the subsequent developments in his case, it is not improbable that this so-called "sunstroke" was really an epileptic seizure.

At this period he seemed absolutely free from all symptoms other than those just detailed. His case was accordingly considered one of *tic douloureux*, due to some intra-cranial trouble.

Progress of the Case.—In a few weeks after his admission new symptoms declared themselves. It was observed that he had some difficulty in maintaining the erect position, that he staggered in walking, and that he preferred to lie in bed upon his back. He still referred his suffering chiefly to the distribution of the fifth, but he also complained of a dull aching of his head. The left eye continued much congested, the pupil dilated; the left side of the nostril also became very red and much swollen, and the hyperæsthesia of the left side of the face increased. Considerable hebetude of mind was now observed; his sense of hearing became dull, and taste appeared to be entirely abolished.

One day, after some hours of stupor, he was suddenly attacked with violent convulsions and maniacal excitement, during which he attempted to bite and otherwise injure all who approached him. This state of excitement was accompanied with heat of surface and hyperæsthesia, especially of right side of the body and right inferior extremities. After this acute attack, it was observed that both pupils were dilated, and that his perception of light was much diminished. Soon the pupil of the left eye ceased to respond to the light; the redness and turgidity of the conjunctiva, of the face, and of the nostril of the left side increased, and attacks of epistaxis from this nostril became frequent.

The convulsive seizures became more frequent, but occurred at irregular intervals. It was observed that some hours of stupor invariably preceded the attack, and that the convulsion was followed by noisy delirium lasting about twenty-four hours.

The pupils remained dilated and motionless, and at length perception of light was completely lost, although, in answer to my inquiries, he always replied that he saw at "seven o'clock this morning." Prof. Seeley, at my request, made an ophthalmoscopic examination of his eyes, and although this was not very satisfactory, in consequence of the patient's restlessness, the Doctor ascertained that the optic papillæ were altered, the retinal vessels much engorged, and that excavations existed in the retina. He expressed the opinion that the case was one of cerebral tumour. This opinion I had begun to form myself, although misled by the hyperæsthesia of the fifth, I had supposed in the beginning that my patient was labouring under chronic inflammatory trouble, with exudation, involving that portion of the brain from which this nerve takes its origin.

The case increased in gravity. Vomiting and obstinate constipation were superadded to the other troubles. His speech became thick and stuttering, and some dysphagia occurred. His taste was completely lost, so that a drop of croton oil excited no more sensation than a drop of water. He lay at last in a state of semi-unconsciousness, except when roused by his convulsive seizures, when he screamed and raved and seemed in the deepest distress for several hours.

The patient was at length transferred to the Commercial Hospital, where he died on the 14th of April. Prof. E. Williams, soon after T.'s admission, made an ophthalmoscopic examination, which confirmed the previous examination of Prof. Seeley. I quote his observations, as recorded by Dr. James T. Whitaker, resident physician. The examination "revealed an enlarged and tortuous condition of the retinal veins and blurred appearance of the optic papillæ, with structural retinal changes, which he attributed to a tumour somewhere at the base of the brain, interfering with the venous circulation."

I extract from the same report an account of the post-mortem appearances:—

"Autopsy by Prof. Wm. H. Taylor, M. D., Pathologist to Commercial Hospital, seven hours after death.—Firm post-mortem rigidity; contusion an inch and a half long over left supra-orbital ridge; dry herpetic eruption on upper lip; bed sore covering entire sacrum, and one over each trochanter; more than usual contraction of fingers. Over right half of frontal bone recently extravasated blood in connective tissue; dura mater firmly adherent to calvarium; membranes much engorged with blood; increased number of *puncta vasculosa* in substance of brain; two ounces of colourless serum in lateral ventricles, which were expanded in transverse diameter; effusion into infundibulum compressing optic commissure; small amount of serum in middle fossa; anterior portion of right hemisphere of cerebellum firmly adherent to cranium; lying anteriorly to and below the right hemisphere a firm nodulated tumour, which was enveloped in a distinct capsule attached to, but easily separated from, the membranes; tumour $4\frac{1}{2}$ and $3\frac{1}{2}$ inches in its circumferences, encephaloid in structure, consisting, under the microscope, of cells and exudation-corpuscles inclosed in a fibrous stroma. (?)

"Tumour had compressed the right half of the medulla oblongata towards the median line, implicating the right pneumogastric nerve.

"Imbedded in the substance of the cerebrum, above and behind the tumour, was a pyriform cyst, two inches in its long diameter, and one and a half inch in its short, the apex of which extended into the crus cerebri. Surrounding brain substance of semifluid consistence."

Commentary.—These cases agree in many respects, but also present points of difference, due, no doubt, to the different position of the tumour in each case. An analysis of the symptoms will exhibit this fact fully.

Cephalalgia was the first symptom noted in each case, but it was more violent, constant, and "obstinate" in the first than in the others. This symptom has been generally observed in cases of tumour of the brain, especially when the growth occupies or involves some portion of the cerebrum; but it is also present in the cases of tumour of the cerebellum, pons, and medulla. Ladame,¹ in a collection of twenty-six cases of tumour of the annular protuberance found that headache was a symptom in sixteen. It is rarely distinctive of the position of the tumour, being generally deep-seated, widely distributed, and not confined to a special locality. In some cases of tumour at the base, the pain is localized at the

¹ Des Tumeurs de la protubérance annulaire. Archives Générales de Médecine, Août et Septembre, 1865. I regret my inability to procure Dr. Ladame's "Symptomatology und Diagnostik der Hirngeschwülste."

occiput; in some cases of tumour of the hemisphere, pain is confined to the upper part of the head and to the forehead. Ladame considers cephalalgia a symptom of great importance, especially when it comes on without obvious cause, persists and increases in violence. Rostan,¹ on the other hand, regards headache as a very constant and characteristic symptom in softening. Both writers use the same term, *opiniâtre*, in describing the character of the headache. In cases of *ramollissement*, however, feebleness of the intellectual faculties and paralysis quickly follow the first onset of cephalalgia. Todd² thinks that "where the pain, whether sharp and burning, or dull and heavy, is fixed in its situation, and varies only in intensity, and not in locality; it may generally be referred to intracranial irritation, such as would probably arise from disease of the membranes, or of some superficial parts of the brain." In the beginning of these various affections of the brain, it would certainly be assuming too much to assign a definite diagnostic value to the cephalalgia.

In the first case, the headache, in the beginning, had an intermittent character; but it finally became continuous, and increased in severity, and was not localized. In the second case, the pain seemed superficial, rather in the scalp of the forehead and occiput than in the brain itself—for not only was the pain neuralgic in character, but it was relieved by the application of warmth. In the third case, a violent tic seemed to be substituted for the headache, yet in the paroxysms of excitement attended by convulsions the manner in which the patient applied his hands to his head indicated excruciating cephalalgia. The hyperæsthesia of the left trigeminus in case third is a remarkable fact. The "nodulated tumour" and the cyst both occupied the right side. Unfortunately, the account of the post-mortem appearances does not state clearly the precise position of the tumours and the parts impinged upon by them, but it is evident enough that they could not have involved the left trigeminus.

Alterations of sensibility in parts supplied by the fifth, are very common, and the hyperæsthesia cannot be distinguished, as Ladame has well observed, from ordinary facial neuralgia. In T.'s case, the tic of the left side was the only symptom at the time of his admission into the hospital. It was so well-marked a case of neuralgia of the trifacial, due to some intracranial trouble, that I made it the subject of a clinical lecture. At this time the left pupil was dilated; the sight was dim, and the conjunctiva intensely congested; the whole side of the face was swollen, the left anterior nares injected, and the left half of the upper lip covered with an eczematous eruption. These alterations in the nutrition of the parts supplied by the trigeminus, are common enough in ordinary cases of tic-douloureux, and hence their occurrence in this case afforded us no precise in-

¹ Recherches sur le Ramollissement du Cervau, p. 12, deux edition. Paris, 1823.

² Clinical Lectures on Paralysis, Am. ed., p. 34.

dication of the nature and position of the intracranial trouble.¹ Ladame has observed these symptoms in tumours of the middle fossa, and Romberg reports a case in which they were produced by an aneurism of the internal carotid. In both of these the fifth was directly involved. The peculiarity of the case here reported consisted in the production of a violent tic in the left side, the lesion being on the right. Schræder Van Der Kolk,² as also Luys, have published observations which explain this apparent anomaly. They show that although "the nerves of sensation do not decussate, and terminate in nuclei on their own side, the impression produced in them is conveyed to the opposite side. . . . No anatomist has ever asserted that the sensitive root of the trigeminus itself arises from the opposite side of the medulla oblongata. . . . It is, however, evident that the sensitive influence must be conveyed to the opposite side, just as occurs in the nerves of motion, as otherwise no harmony could exist between the two sides. Hence it appears that the perception of sensation cannot be situated in the nuclei of the nerves themselves, as those of the vagus, glosso-pharyngeus, and trigeminus; but the impression excited here must be conveyed by other fibres, which, as we have seen, decussate to the other side." Luys³ describes, in a similar manner, the commissural fibres which connect the trigemini.

In each of my cases, affections of the organs of sense existed. These are very common in tumours at the base. In twenty-seven cases of tumour of the cerebellum recorded by Luys,⁴ feebleness of vision, or amaurosis, was observed in ten; and other disorders of vision in three. Deafness was noted in four. Friederich,⁵ in forty-four cases of tumour of the cranial cavity in general, has found disorders of the organs of sense twenty-six times; vision alone, twelve times; and associated with derangement of the other senses, thirteen times. Ladame has observed them twenty times in twenty-six cases. The latter, in his paper in the *Archives Générales*, thus states the relative frequency of these disorders of the organs of special sense in tumours of the annular protuberance:—

¹ Axenfeld, *Des Nevroses*; Romberg, *Manual of the Nervous Diseases of Man*, Sydenham Society translation; *Recherches sur quelques troubles de Nutrition consecutifs aux Affections des Nerves*, par J. B. A. Mougeot: Paris, 1867. The last-named makes frequent references to the very important contributions of our own countrymen, Drs. Mitchell, Morehouse, and Keen—"Gunshot and other Injuries of Nerves."

² On the Minute Structure and Function of the Spinal Cord and Medulla Oblongata. Syd. Soc. translation, p. 113.

³ *Recherches sur le Système Nerveux*, &c.

⁴ *Ibid.*, p. 78.

⁵ Quoted by Perrenout, *Étude Clinique sur le Diagnostic des Tumeurs Cérébrales*. (Arch. Gén.)

Convergent strabismus	6
Divergent strabismus	1
Diplopia	2
Ptosis	2
Dilated pupils	4
Inequality of the pupils	2
Contracted pupils	1
Insensibility of the conjunctiva	1
Injection or inflammation of the conjunctiva	2
Amblyopia or amaurosis	10
Dulness of hearing, or deafness	7
Noises in the ear	2
Alterations of taste	6
Alterations of smell	4

These affections of the senses are variously combined. Ladame arranges them as follows:—

Vision, hearing, smell, and taste	1
Hearing, smell, and taste	1
Vision, hearing, and smell	1
Vision, smell, and taste	2
Vision, hearing, and taste	1
Vision and hearing	3
Taste only	1
Hearing only	2
Vision only	2

These statistics show that the eye is more constantly affected than any of the organs of special sense. In each of my cases there were disturbances of vision; in two, amaurosis; in one, dimness of vision; in two, loss of hearing upon one side was observed; in one, loss of taste occurred.

The most interesting and important circumstance, as respects the organ of vision, is the occurrence of amblyopia and amaurosis. As the statistics above quoted show, this symptom is observed in nearly one-half of the cases of tumour occurring at the base of the brain. I was fortunate in being able to avail myself of the aid of Prof. Seeley's careful ophthalmoscopic examination of Cases 2 and 3. His description of the condition of the retina in Case 3 was also confirmed by a subsequent examination made by Prof. E. Williams. The alterations of the retinae, as described by these very competent observers, correspond to the description of Bouchut, as given in his very elaborate volume.¹ He says:—

“The principal and most definite lesion is *amaurosis*, the result of atrophy of the optic nerve produced by lesions of the circulation (hyperæmia, or serous infiltration), which occurs in the beginning of the disease. When the atrophy is fully established, vision is irrevocably lost. The

¹ Du Diagnostic des Maladies du Système Nerveux, par l'Ophthalmoscopie, p. 300. Paris, 1866.

nerve-cells and tubes are converted into connective tissue, into adipose tissue, and amyloid matter. During life this state of things may be recognized, on ophthalmoscopic examination, as an atrophy of the optic papillæ. At the fundus of the eye the papillæ appear blanched, glistening (*nacrée*), having at their centre a whiter spot, in which the ordinary concentric rings are scarcely visible. The papillæ diminish in size, becoming irregular, ragged, or deeply excavated, and the smaller vessels lessen in volume and finally disappear, leaving only the principal veins of the retina."

Bouchut gives, in the body of his work, several instructive wood-cuts, which exhibit the changes in the papillæ, and the deep excavations sometimes produced in the retina. In the atlas accompanying his work are several plates showing the ophthalmoscopic appearances of the retina.¹

Ladame, however, in describing the condition of the retina in cases of tumour of the brain, observes that two varieties of atrophy of the optic nerve exist. The first variety, which, he says, takes place without inflammation, corresponds to the description just quoted from the work of M. Bouchut. The second variety is that in which atrophy follows neuritis; in this condition the papillæ, instead of being white and glistening, become blurred, the vessels tortuous, and pigment accumulates about the nerve entrance.

"Mr. Wecker supposes that when an intracranial tumour grows very rapidly, it causes neuritis; whereas, when the growth is more gradual, it may give rise to progressive atrophy, especially when it directly presses on the roots of the optic nerve." But it is not necessary that the intracranial disease should involve the optic nerve-fibres in any part of their course in order to produce amaurosis. Dr. Hughlings Jackson says: "So far as the production of optic neuritis, by intracranial disease, is concerned, the *position* of the disease seems to be of little consequence, and there is nothing very peculiar in its nature, except that it is usually coarse."²

Liebreich³ gives two figures, showing the blurred appearance of the papillæ in cases of cerebral tumour. Galezowski⁴ also gives two figures, showing the changes in the retina in a case of tumour of the posterior fossa. First there occurred a neuritis—a varicose condition of the central vein, and especially of the capillary vessels of the papillæ. This neuritis resulted in complete atrophy. At page 150 Galezowski describes more in

¹ Sichel, in 1859, appears to have been the first to employ the ophthalmoscope in the diagnosis of cerebral affections. In the following year, 1860, Graefe communicated several cases to the Biological Society. Droux also published, in 1862, a number of cases which he had observed at the clinic of Desmarres. (Bouchut.)

² Ophthalmic Review, vol. iii. p. 48. Quoted in Dublin Quarterly Journal, November, 1866.

³ Atlas d'Ophthal., Pl. xi., Figs. 7, 8, and 9. See especially Figs. 8 and 9, and consult remarks on these.

⁴ Étude Ophthalmoscopique sur les Altérations du Nerf Optique et sur les Maladies Cérébrales dont elles dependent. Chap. ii. p. 138. Paris, 1866.

detail the ophthalmoscopic appearances: the papillæ are œdematous and prominent; veins enlarged, varicose, and tortuous; collateral branches enlarged, &c. Three months afterward, vision being lost, he found an atrophy of the papillæ, their margins being fringed and irregular. This condition was produced by an organized peripapillar exudation, and consequent atrophy of the nerve-fibres.

If a cerebral tumour impinge upon or destroy the tubercula quadrigemina or optic chiasm, there can be no doubt as to the manner in which the result is accomplished. Graefe emitted the opinion that the dilatation of the veins of the retina, serous infiltration and atrophy of the nerve, are the results of pressure of the tumour upon the cavernous sinus, whereby the return of blood is prevented. Graefe's followers adhere to this doctrine in spite of the most conclusive demonstrations against it. These views have been successfully combated by Lancereaux, in a paper published in the *Archives Générales* for January and February, 1864.¹ This observer has shown that pressure upon the cavernous sinus cannot exist in many cases in which these changes in the retina are found. He reports four cases: in the first, a serous cyst existed in the right anterior lobe; in the second, a neoplasm, the size of a duck's egg, in the depth of the left anterior lobe; in the third, the corpus striatum, and part of the optic thalamus of the right side, were replaced by a membranous neoplasm; and in the fourth, induration of a part of the corpus striatum and optic thalamus of the right side, inflammation of the meninges at the base, and exudation were found. In these cases characteristic alterations were observed in the retina and optic nerve, which could not be referred to a mechanical hyperæmia. With respect to the first case, Lancereaux remarks that "compression of the optic nerves and cavernous sinus was not possible;" in the second, the moderate compression exerted by the tumour on the mass of the cerebral lobe cannot be considered sufficient to cause atrophy of the optic nerve; in the third, so far from the tumour making any pressure, "the brain diminished in volume, occupied but a part of the cranial cavity;" and, in the fourth case, "the idea that a certain degree of compression having determined the amaurosis and atrophy of the optic nerve is not more admissible than in the preceding cases."

These facts are conclusive against Graefe's view, at least in respect to many cases. Nevertheless, there are some cases in which engorgement of the retinal vessels seems to be produced by pressure upon the cavernous sinus. Bouchut notes amaurosis, atrophy of the nerve, &c., in various inflammatory and chronic structural changes of the brain and meninges. He expresses the truth, no doubt, when he asserts that the alterations of the

¹ De l'Amaurose liée à la Dégénération des Nerfs Optiques, dans les Cas d'Altération des Hémisphères Cérébraux, par le Dr. E. Lancereaux, Chef de Clinique Médicale à la Faculté de Médecine de Paris.

retina are due to congestion, effusion, and inflammatory changes wrought in the brain by the presence of the new formation. Changes similar in character are found in cases of diabetic amblyopia.¹ In Case III. the growths were not in a position to compress the cavernous sinns, and, what is equally significant, the most marked changes in the retina followed the first febrile movement, which was no doubt coincident with inflammation of the meninges in the neighbourhood of the tumour, and with the formation of the so-called cyst in the right posterior lobe of the cerebrum.

Galezowski² proposes an eminently rational explanation of the occurrence of amaurosis in the case of neoplasms in the posterior fossa of the cranium.

"These new growths," he remarks, "impinge upon the neighbouring organs, and especially upon the pons and the peduncles of the cerebellum. As the tubercula quadrigemina are situated above the pons, and as the peduncles of the cerebellum communicate with the same bodies, an inflammation of these organs is not unfrequently transmitted to the tubercula quadrigemina, thence to the optic tract and to the optic papilla. Such is the explanation which we have to offer of the occurrence of optic neuritis consecutive to tumours of the basilar process."

With respect to the mode of production of amaurosis in cases of tumour of the cerebral hemispheres, Galezowski makes the following observations:—

"Alterations of the anterior lobes of the cerebrum do not exist long without producing inflammation and softening in the surrounding parts. These lesions may include the organs of sense, and especially the optic nerves, producing an inflammation or an atrophy which travels along the nerve to the papilla. We are able to explain in this way the phenomenon of blindness in the case of tumours and cysts of the anterior lobes. M. Graefe has attempted to explain the coexistence of amaurosis and optic neuritis with cerebral tumours by affirming the compression of the cavernous sinus and the dilatation of the veins producing œdematous infiltration. This opinion may be admitted in respect to voluminous tumours occupying a great part of the anterior lobes, but cannot explain the production of blindness when the tumour is small, and separated from the base of the cranium by a layer of cerebral substance."

M. Galezowski refers, in support of his views, to the able paper of M. Lancereaux which I have already quoted at some length.

Disorders of motility existed in each of my cases. Ladame³ has ascertained the existence of these disorders in five-sixths of his cases. He divides them, according to their origin, into two classes: 1st, those de-

¹ *Recherches sur les Accidents Diabétiques, etc.* Par le Dr. Marchal (De Calvi). Paris, 1864. p. 471.

² *Étude Ophthalmoscopique, etc., op. cit., p. 149.*

³ Quoted from an abstract of Dr. Ladame's work in the Dublin Quarterly for November, 1866.

pendent upon irritation; 2d, those arising from loss of function of some part of the brain. Convulsions, ataxia, choreic and rotatory movements belong to the first class, and the various forms of paralysis to the second. In the first case backward movements and ataxia existed, and also paresis of the facial; in the second, the ataxic phenomena were the marked features of the case; in the third, ataxia, embarrassment of speech, dysphagia, and convulsions were present. The symptoms, then, in these cases were chiefly those of irritation, and as the functions of the cerebellum were impaired in each case, the irritation involved this organ. In the first case the neoplasm extended but little beyond the cerebellum; in the second, the supposed tumour most probably involved the inferior peduncles of the cerebellum and the medulla oblongata; in the third, the cerebellum was impinged upon by the tumour, but the most important symptoms were produced by the pressure upon the medulla oblongata, and the interference with the functions of the pneumogastric and with the ninth, producing nausea and vomiting, difficulty in the movements of the tongue and palate, producing stuttering and dysphagia. Paralysis did not exist in either of my cases, except paresis of the facial. This symptom may often possess great diagnostic value: thus, when the paralysis is crossed, or, in other words, when the face is paralyzed on one side and the limbs on the other, there is good ground for diagnosing tumour of the pons Varolii. When paraplegia exists, as is sometimes observed, the tumour probably affects the medulla oblongata; in this case the paralysis does not occur in the limbs at the same time, but in one after the other. (*Ladame.*)

In twenty-six cases of tumour of the annular protuberance, *Ladame* has observed—

Spasms of the muscles of the face in	1
Contractions of members in	2
Tetanic cramps in	1
Convulsions, spasmodic movements, in	3
Epilepsy in	2
Movements of rotation of head in	1
Standing or walking uncertain or impossible in	4
Paralysis, direct, of masseter or temporal	1
“ “ of facial	11
Paresis of an arm and paralysis of an opposite limb	1
Hemiplegia, complete or incomplete, of side opposite the tumour .	12
Paralysis, complete or incomplete, on same side as tumour . . .	1
“ general	5
Paresis of an arm on same side as tumour	1
“ of both arms, and of a hand of the opposite side	2
Paraplegia	3

It is a curious circumstance that mental derangement occurs as frequently in cases of tumour at the base as in tumour of the cerebrum. In neither of my cases was there any disorder of the mind in the beginning. In the

first case the earliest symptom was the development of a quarrelsome disposition; afterwards illusions and attacks of fury. In the third case there was a marked degree of mental hebetude; afterwards stupor, followed by convulsions and maniacal delirium.

Authors differ as to the comparative frequency of mental derangement. Nasse, according to Perrenout, ascertained that mental derangement existed in the proportion of 19 to 50. Calmeil found mental derangement in one-half of his cases. Andral, who has analyzed 43 cases, ascertained that the intelligence was undisturbed in the most of them. Durand-Fardel, who bases his opinion upon an examination of 70 cases, agrees with Andral. Lebert found mental disorder in one-third—29 in 90 cases. Ladame, whose observations I have had occasion so frequently to quote, says that the intellectual functions were affected in one-half of his cases of tumour of the annular protuberance—a proportion quite as large as that noted by Calmeil in tumour of the brain in general. The psychical disorders, he says, are quite as frequent in the cases of tumour of the base as in the cases of tumour of the hemispheres. The intellectual derangements are no doubt due to inflammation and its products, which are always found in the cases of cerebral tumour.

The cases detailed in this paper show how little characteristic are the first symptoms of tumour of the brain. The cases evolve themselves slowly—so slowly, indeed, that it is difficult to fix the date of commencement. In two of my cases the patients attributed the origin of their troubles to “sunstroke.” Generally, the earliest symptom is headache; at first slight and intermittent, but increasing in severity, and becoming finally continuous. The headache is followed by disorders of sensation—anæsthesia and hyperæsthesia, usually of the parts supplied by the fifth. Next follow disorders of motility, disturbances of the special senses, and, lastly, mental derangement.

The peculiar character of the symptoms may indicate the situation of the morbid growth.

In cases of tumour of the cerebrum, the following symptoms are observed: headache, not, however, confined to the seat of the morbid growth, and thus indicating its position, but limited to one side of the head, or deep-seated and diffused; epileptiform convulsions, and mental derangement. Alterations of sensibility and of the special senses do not usually occur. Paralysis is not generally present in tumours of the posterior lobes, but is common in tumour of the middle and anterior lobes. Alterations in the special senses occur more frequently in tumour of the middle lobe, except the sense of smell, which is more usually affected by tumour in the anterior lobe.

Tumours of the corpus striatum and optic thalamus are accompanied by the following symptoms: hemiplegia, partial or complete, on the side opposite the tumour, and convulsions; common sensation and the special senses are not frequently affected, and the mind is not often impaired.

In tumour involving the crura cerebri, lesions of sensation and paralysis

of the face and of the limbs on the opposite side, giddiness, and paralysis of the motor oculi have been observed.

In tumour of the pituitary gland, the symptoms are frontal headache, amaurosis, first in one eye, then extending to the other. The mental powers are generally unimpaired, and there are no alterations of speech, sensation, or motion. In a case which has been brought to my notice, non-saccharine diuresis and epileptic convulsions were prominent symptoms.

The symptoms are more complex in tumour of the pons. We find here crossed paralysis; face paralyzed on the same, and limbs on the opposite side; pain or anæsthesia in the paralyzed parts; disorders of the special senses; dysphagia, and mental derangement. Convulsions are so uncommon in tumours of the pons, that Ladame lays down the following rule: "If a tumour has attained sufficient size to allow of its presence being diagnosticated, and if convulsions be present, the probability is that the seat of the tumour is not in the pons Varolii." He also considers, and no doubt justly, that the simultaneous affection of several of the organs of sense is indicative of tumour of the pons.

In tumours of the medulla oblongata, pains in the limbs, anæsthesia, convulsions, and sometimes partial or complete paraplegia, giddiness, vomiting, staggering gait, pains in lower extremities, amaurosis, dulness of intellect, hallucinations, delirium, &c., have been observed.

The following symptoms have been noted in tumour of the cerebellum: occipital headache, convulsive attacks, defect in the power of co-ordination, whence walking and standing are difficult or impossible, convergent strabismus, amaurosis; usually no disturbances of sensation except headache; no paralysis; no lesions of speech; no mental derangement. Mental derangement, however, does occur sometimes in case of tumour of the cerebellum, as a result of the changes in the circulation of the brain produced by the irritation of the new growth.

I might have gone with some particularity into the different varieties of tumours which grow within the cranium, but this inquiry would hardly be pertinent to the object which I have had in view—to present the clinical relations of cerebral tumours.

ART. III.—*On the Action of the Hyposulphite of Soda in Intermittents.*

By C. H. CHUBB, M. D., Cambridge, Md.

THE hyposulphite of soda, having recently obtained some reputation as a remedy in malarial diseases, I was led to make a trial of it in a number of cases, with the following results:—

Of twenty-seven cases in which the remedy was administered, the paroxysms were arrested in twenty-five; in eleven of these the arrest was immediate, no paroxysm occurring after the treatment was instituted.

These cases were nearly all of the tertian type. In nine cases, one paroxysm, and in the remaining five, two or more paroxysms occurred after the use of the remedy was commenced. These cases were mostly quotidians or double tertians, and the recurring paroxysms were invariably of mitigated severity. In no case was the remedy continued longer than a week, unless there was manifest improvement. In five of the cases relapses occurred; in three of these the disease was again arrested by the same remedy, and did not return, the treatment having been continued some time after the arrest of the chills; in the other two of the relapsing cases, sulphate of quinia was resorted to, to complete the cure. The subject of one of these cases was a child four years of age; the other case occurred in a tuberculous subject, where a hectic condition obtained, and in which several relapses have since occurred, notwithstanding the administration of quinia, iron, and cod-liver oil.

One of the cases cured is worthy of special notice. The patient, a female, *æt.* 36, had been the victim of ague for twelve months, during which, although drugged to excess, with quinia, iron, &c., she had never passed more than two weeks without a recurrence of the chills. Her general health was much impaired. She took the hyposulphite in doses of fifteen grains every two hours, and had but one paroxysm after the treatment was instituted. Her subsequent improvement was rapid and uniform. She has had no relapse since her first recovery, which took place more than six months ago.

Two of the twenty-seven cases are recorded as failures; in one of these, however, the failure was not complete. The treatment was continued for a week, the paroxysms recurring each day; though during the treatment their severity greatly diminished.¹ This patient, a female, suffered from griping pains in the bowels, and frequent watery discharges, which she attributed to the remedy; and it is to be remarked that another member of the same family had been similarly affected while under its use. Under these circumstances the hyposulphite was discontinued, and the cure completed with sulphate of quinia. The intestinal disturbance ceased upon the withdrawal of the sulphite.

In the other case, an unmitigated failure must be admitted. The patient was a robust man, *æt.* 45, who, favourably for the experiment, entertained strong prejudices against the use of quinia. With a zeal truly commendable, he took the new remedy in doses of from fifteen to twenty grains every two hours for a week, assuring me each day that the severity of the paroxysm was greatly diminished; but an increasingly haggard countenance and jaundiced skin, with the delirium which succeeded each chill, warned me to desist from a further prosecution of the experiment. In this, as well as the preceding case, the disease was at once cut short by the ordi-

¹ In weighing the significance of this fact, the natural tendency of the paroxysms to become less and less marked must be borne in mind.

nary treatment, showing that they were not, in themselves, cases of unusual obstinacy.

In addition to the cases above recorded, I have administered the remedy in a number of others, of which no record was kept. In some of them the treatment was not faithfully carried out by the patients. The conclusions at which I have arrived are, that the hyposulphites constitute a valuable addition to our resources in the treatment of malarial diseases, but that, in the majority of instances, they are less prompt than the preparations of cinchona. I consider them most appropriate in cases which resist the action of sulphate of quinia, or in which that remedy is contraindicated; but I should hesitate to rely upon them in grave forms of pernicious remittent. In these cases the patient can be almost certainly rescued from jeopardy only by the speedy and energetic administration of sulphate of quinia, a reliable substitute for which has, in my opinion, yet to be produced.

Since writing the above I have noticed, in the last number of this Journal (Jan. 1868), additional testimony in favour of the new remedy. Besides the reports from Dr. T. Leavitt and Dr. W. H. Baxter, which appeared some months since, we have still stronger testimony from Dr. S. E. Hampton (*Cincinnati Lanc. and Obs.*), and from Dr. W. E. Turner, of Leavenworth, the former reporting 66, and the latter 125 cases. These gentlemen, with more ample experience than my own, have obtained results more entirely satisfactory than the foregoing. I will only say, that in arriving at the conclusions above stated, I have borne in mind what appears to me to be an important consideration, viz., that in the treatment of intermittents, a remedy must act with some degree of promptness, in order that we may decide correctly as to the share which the medication may have in effecting a cure; for, as Dr. Flint observes upon this subject, the disease tends intrinsically to end, after a few paroxysms, in a certain proportion of cases.

My experiments have been confined entirely to the hyposulphite of soda, the corresponding salt of magnesia, which has been specially recommended, not having been at hand.

ART. IV.—*Description of a New Splint, applicable to certain Deformities of the Extremities; also of a Modification of the Grooved Director, useful in the Cutting Operation for the Relief of Anal Fistula.* By HERBERT M. HOWE, M. D., formerly Resident Surgeon to the Episcopal Hospital, Philadelphia. (With three wood-cuts.)

EVERY new mechanical appliance, and each modification of one already in use, may find certain cases to which it is especially applicable; it may, therefore, not be amiss to notice two instruments which have been found

to possess decided advantage in the few cases in which I have had the opportunity of using them.

In the spring of 1866, during my service in the surgical wards of the Episcopal Hospital as resident physician, Otis K., æt. 11 years, was admitted, suffering from false ankylosis of the knee-joint, with considerable flexion of the leg upon the thigh, rendering the limb very imperfect as an organ of locomotion. This condition was owing to contraction of the skin and deeper structures in the popliteal space, following inflammation of the part, which had advanced to the formation of several abscesses. Cicatrices marking the positions of previous ulceration covered most of the popliteal space. Subcutaneous incisions were made loosening the parts which appeared to be the most firmly bound down, after which the leg was put on Stromeyer's splint. No visible improvement followed this procedure, and the boy's general condition, which, up to this time, had greatly improved under the use of tonics and exercise, seemed to suffer from the confinement incident upon the treatment adopted. Extension made by a weight, applied by broad strips of adhesive plaster, as in certain cases of fracture, was also tried, but the result was nugatory.

It seemed very desirable that the boy should have an apparatus which, while it made easy and constant pressure in the proper direction, should not interfere with exercise and some slight motion of the part. To fulfil this indication, I procured some well-seasoned, straight-grained hickory, and cut out of it two round sticks, about one-fourth of an inch in diameter, and long enough to extend from about an inch below the perinæum to an inch from the bottom of the foot. Fastening to these pieces of sheep's skin, in a manner that will be seen in the accompanying cuts, (Figs. 1 and 2), the instrument was ready for application.

Fig. 1.

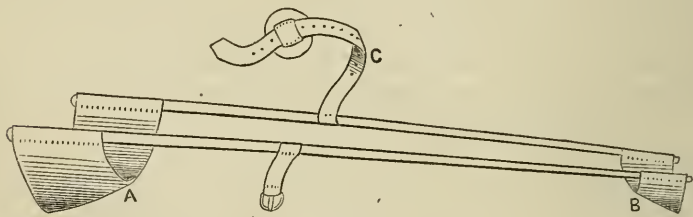
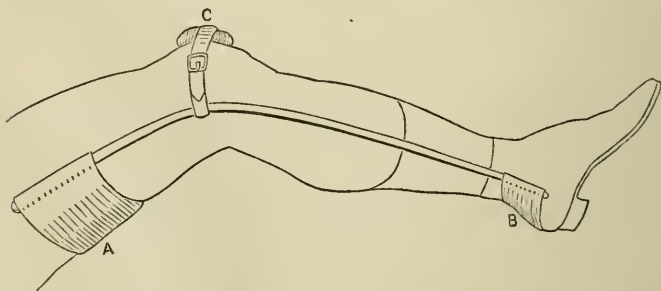


Fig. 2.



Having placed the patient on a bed, the affected limb was raised, and the broad leather band A was put upon the ham, and B enveloped the

back portion of the heel. The leather bands had been so cut that they fitted the parts to which they were applied accurately, thereby avoiding any subsequent displacement of the apparatus. Now, by bringing the strap over a pad which had been made to fit the patella, and passing it through the buckle which is attached to the other hickory rod, traction was made, which bent the shafts and made them correspond more nearly to the angular condition of the limb, while, at the same time, the force employed tended to straighten the leg. The springs were drawn up sufficiently to make firm pressure, but just short of causing pain. This being accomplished, the boy's pantaloons could be put on, and he be allowed to run about as he chose.

It will be noticed that this apparatus retains itself in proper position, and that this is accomplished without having the limb encircled by a band at any one place, by avoiding which the circulation in the affected part is left unimpeded. This, I conceive, is a very important feature in an instrument having for its object such an influence upon the limb as will render it again useful as an organ of locomotion. Its previous inactivity has caused, in a measure, imperfect nutrition; and if, in the treatment, bandages, or any apparatus that would constrict the free circulation in the part should be used, this would tend to prolong one of the causes that keep up its morbid condition.

By the use of the splint above described, the limb regularly became straighter, and motion in the knee increased. At the time he left the hospital, he could walk (with the splint on) with so little limping, that it was imperceptible, except upon close observation. To complete recovery, however, it was necessary that he should wear some such apparatus for a considerable time after leaving the hospital. His parents soon realized this, for in less than two weeks after his discharge, his father came to the hospital and desired to borrow my splint as a model from which to have another made. I took the matter in hand, and directed Mr. Gemrig to make one after the same plan, substituting small steel rods for the hickory sticks. It seemed to fulfil every indication; and upon subsequently seeing Otis, I found that his limb was very nearly straight, and that the knee-joint had considerable motion; he could walk long distances without fatigue; in fact, his condition was in every way satisfactory.

Next, I will notice a modification of the common grooved director (such an one is found in every physician's pocket case), which has proved especially convenient in the cutting operation for the relief of fistula in ano. I had experienced trouble upon several occasions when operating for this affection, from the irregularity of the fistulous track, rendering it tedious to introduce a probe, and carry it through its entire extent. It was especially annoying, after having successfully passed the probe until its end was felt in the rectum, to withdraw this instrument, and begin, *de novo*, to introduce a director through the same irregular canal. The misfortune of having to do this was doubled if the patient was not under the influence of an anæsthetic, and was again obliged to submit to the pain incident upon the reintroduction of an instrument. In order that advantage might be taken of the probe already being in the fistule, I had a director so constructed that its end might be slipped over the probe and passed upwards until felt in the

rectum. The modification will be readily understood by referring to the cut (Fig. 3).

Fig. 3.



Besides this director, I had two probes made, the flexible one of silver and the other of steel. They were of the same size throughout their whole length, not having the bulbous extremity found on the probe commonly in use. They were of such size as would readily pass through the orifice found at the point of the director. After passing the probe through the anal fistule, and feeling its point on the forefinger previously introduced into the rectum, the hole on the tip of the director has merely to be put upon the end of the probe that is external, and, carefully supporting the other end of it, the director can be speedily pushed upward until it reaches the finger in the gut. Of course it cannot deviate from the canal in which the probe already lies. The probe can now be withdrawn, and the operation completed in the usual manner.

I have used this instrument in three cases, in each of which the operation was accomplished with much expedition. By its employment the necessity for giving ether when operating for anal fistula, is materially diminished. It will be seen that by the modification suggested, the general usefulness of the director is in no way impaired.

PHILADELPHIA, Jan. 10, 1868.

ART. V.—*Four Cases of Angular Osseous Anchylosis of the Knee, Treated by Subcutaneous Intra-Articular Drilling and Disruption.* By S. D. GROSS, M. D., Prof. of Surgery in the Jefferson Medical College, Philadelphia. Reported, with remarks, by S. W. GROSS, M. D., of Philadelphia. (With a wood-cut.)

SYNOSTOSIS, or bony anchylosis of the knee, at a faulty angle, being of comparatively infrequent occurrence, it is not surprising that it has rarely been the subject of operative interference. Many surgeons of eminence, indeed, do not hesitate to express the opinion that operations are unwarrantable where the osseous union is complete; and even go so far as to say that it is not only incurable, but that it admits of no improvement or change in the position of the limb. In other words, no matter how inconvenient, useless, or awkward the limb may be, the sufferer must remain content with his lot.

Louvrier, of Paris, did much to bring attempts to rectify the deformity resulting from angular synostosis into disrepute. With a machine which

was capable of exerting powerful extension, the osseous adhesions were fractured, and, although he met with some success, yet so many failures to effect the object and such lamentable results ensued, as to cause his measure to fall into complete and deserved desuetude. In the hands of Dieffenbach, Langenbeck, Little, and others, forcible manual rupture, combined, if necessary, with subcutaneous division of the hamstring tendons, has been attended with a certain amount of success; but it is evident that such attempts can only be of avail when the inconvenient position is dependent upon partial or recent osseous connections of the articular surfaces. When the synostosis is complete or of long duration, it would be impossible to effect disruption, as efforts at forcible extension would rather result in fracture of the femur above the condyles, or in separation of the lower epiphysis of that bone, or of the upper epiphysis of the tibia in impubic subjects.

Leaving out of consideration, then, forcible fracture of the media of union of the surfaces of the articulation, as being both dangerous to life and inadequate to the relief of complete angular synostosis, it will be found that certain operations have been devised and practised, the results of which clearly show that the deformity is remediable, and this without excessive risk to life and limb. The earliest, most ingenious, and notable of these is that of Dr. J. Rhea Barton, of this city, which consists in excising a cuneiform piece of the shaft of the femur, above the condyles, not including its entire diameter, and fracturing the undivided portion of the bone, after which the limb is gradually brought into an almost straight position, in which it is permanently fixed until union is effected. Dr. Barton's operation, which succeeded perfectly, was executed in 1835, and his practice has been imitated in this country by Gibson, Burr, Mütter, Pancoast, Pope, and J. Mason Warren, and by Bruns, of Tübingen, and Ried, of Jena, the latter as well as Mütter having had three cases. Of these thirteen operations only two terminated fatally, the patient of Pancoast and one of Ried's dying respectively of hectic irritation and exhaustion.

In 1844, Dr. Gardon Buck, of New York, in a case of complete synostosis of the knee with the limb at a right angle, so modified and extended the procedure of Dr. Barton as to remove the condyles of the femur, the head of the tibia, and the patella, in a wedge-shaped piece, whereby the limb was adjusted in almost a straight position. The patient, a male twenty-two years old, suffered from some subsequent inflammation and suppuration; but at the expiration of six months returned to his home, the bony union at the knee being firm, and the limb shortened five inches, the difference in the length of the two extremities being compensated for by a suitable boot. The excision of a cuneiform piece of bone from the ankylosed joint has also been practised by Post, Mütter, and J. Mason Warren, of this country; by Christopher Heath, of London; by Heuser, of Hombrechtiken, Switzerland; and by Langenbeck and Bruns, of Germany. The patients of Bruns and Warren died of pyæmia, while the remaining six recovered with more or less shortened limbs.

It will thus be perceived that of twenty-one cases of excision of a wedge of bone either from or above the joint, only four proved fatal, thereby affording a percentage of mortality of 19.14. The procedure is, therefore, by no means free from risks, four patients subjected to it having died, and several others having been placed in a critical condition. The original operation of Dr. Barton is beyond all doubt preferable to that of Dr. Buck, since, although greater symmetry may possibly be gained by excising a wedge-shaped portion of the joint, the resulting shortening of the limb has been much less, and the recovery not nearly so tedious. The mortality of the procedure is, moreover, in favour of it by ten per cent. It must not, however, be forgotten that the popliteal artery is endangered in Barton's operation by being pricked by a sharp point of the fractured bone. In the first case of Professor Ried, the femoral artery had to be taken up on account of hemorrhage on the thirteenth day. In spite of this complication the patient recovered with an excellent limb at the expiration of seven months. The best result obtained from Buck's operation was in the case of Heuser. Firm bony union had taken place in ten weeks, and the man was afterwards able to employ himself in chamois hunting.

In the winter of 1859 Professor Pancoast had at the clinic of the Jefferson Medical College a youth suffering from complete synostosis of the knee, in whom efforts at extension had previously been fruitlessly employed. Through a single opening the lower end of the femur, just above the condyles, was perforated subcutaneously at half a dozen points by means of a stout gimlet. Having thus succeeded in weakening the bone, he was enabled to break it forcibly, and bring the limb at a proper angle for future usefulness. An abscess formed at the seat of the fracture during the progress of the after-treatment; but, with this exception, no untoward symptoms occurred, and the patient left the hospital with a good limb.

The credit of having proposed the above operation as a substitute for that of Dr. Barton is due to the late Prof. Brainard, of Chicago, who first directed attention to it in his "Essay on a New Method of Treating Ununited Fractures and certain Deformities of the Osseous System," to which a prize was awarded by the American Medical Association in 1854. He did not, however, have an opportunity of applying subcutaneous drilling and fracture of the femur for the relief of true ankylosis of the knee until one year after the operation of Dr. Pancoast, and, in this case, the condyles were the seat of the perforations. The patient, a young man, twenty-three years of age, recovered with a good limb. Dr. Agnew, of this city, has practised subcutaneous drilling and fracture of the femur for the relief of synostosis of the knee at a right angle, in two cases, one of which recovered with a useful limb, without a bad symptom. In his first case, after union was apparently perfect, erysipelas and diffuse suppuration set in, by which the lad's life was imperilled, and the cure much protracted. The procedure of Dr. Brainard being subcutaneous, it should, on theoretical

grounds, give better results, so far as life is concerned, than that of Barton or Buck; but more extended experience is required before it can be pronounced to be as expedient in practice as feasible in theory.

In 1859 Prof. Brainard extended subcutaneous perforation to the joint itself in the case of a young lady, seventeen years of age, in whom false ankylosis was combined with partial osseous union of the patella with the external condyle. The perforator was used as a drill and lever until the patella was detached. A little tenderness and ecchymosis followed this bold and unwarrantable procedure, and the soft adhesions were subsequently ruptured by manual flexion and extension. The limb was then gradually brought straight by means of an extending apparatus.

Another measure for the relief of the deformity resulting from synostosis of the knee, only applicable, however, to impubic subjects, has been suggested by Mr. Barwell, of London, in his *Treatise on Diseases of the Joints*, which appeared in 1861. Of this method, which is denominated epiphysal rupture, and has the merit, at least, of being subcutaneous, the reporter knows nothing, nor is he aware that it has been instituted by other surgeons. The following extract from his work will serve to convey to the reader an idea of Mr. Barwell's estimate of his operation:—

“A few words must be said regarding a mode of procedure advantageously to be adopted in cases of very firm, even true ankylosis, at an inconvenient angle, occurring in impubic persons. In some cases of this sort a wedge-shaped slice has been excised from between the tibia and femur sufficiently thick to allow straightening of the limb. Such operations may, in certain instances, be justifiably performed upon an adult: but I cannot conceive them to be necessary in a person under fourteen years of age. The epiphysis of the tibia, which has not yet united, should be in such cases broken through, and the leg be brought into the same line with the thigh. The upper truncated end of the diaphysis will then rest against the angular end of the epiphysal end, and the limb will only be shortened by little more than an inch. I have never seen any evil result follow such practice; the parts unite firmly and well; the patient gains a useful although a stiff limb. The angle of ankylosis must be very acute to cause this operation to endanger permeability of the popliteal artery; but it is wise to place the splint, which should be applied at once, at the side, not at the back of the limb, and to avoid causing any pressure by the bandage, or otherwise, over the artery.”

The operation of subcutaneous drilling and disruption of the osseous bonds, aided, when the adhesions are sufficiently weakened, by forcible manual extension, through which the undivided portions of the new bone are fractured, about to be described in the following cases, is not new in principle, although it does not appear to have been put in practice until the autumn of 1861, when Professor Gross performed it at the clinic of the Jefferson Medical College. M. Malgaigne, in his *Médecine Opératoire*, 1842, suggests, as a substitute for Barton's operation, breaking down subcutaneously the ankylosed joint by chisel and mallet, but adds that he

should not like to have recourse to it unless in a very urgent case. Dr. Little, of London, in his brochure on *Anchylosis or Stiff-Joint*, published in 1843, remarks that Professor Dieffenbach, of Berlin, had proposed the same operation; but the reporter is unable to find that either of these eminent surgeons submitted their suggestion to the proof. The late Prof. Brainard was probably the first to enter the knee-joint with an instrument for the purpose of relieving bony union; but his case, as briefly described above, was one of false anchylosis along with partial osseous adhesion of the patella to the condyle. Luckily for the patient, the measure was a success, and was followed by no untoward symptoms, as might naturally have been anticipated where so large a joint is subjected to interference. The articulation not having been obliterated by bony union, dangerous consequences might have resulted, and it should not be imitated.

The procedure instituted by Professor Gross is merely an extension of that of Dr. Brainard, with the very important difference that it was applied to joints in which complete osseous consolidation had been effected, and which, consequently, were perfectly tolerant of rough interference. In these cases, the synovial membrane and cartilages were destroyed, and the articulation had become a continuity of bone. Under ordinary circumstances, where the bond of union is soft, or the anchylosis false, and the least particle of motion is preserved, such rude procedure, as the one now to be described, would be attended with great risks, if not productive of fatal results, and could not be too strongly condemned.

CASE I. Henry M., twenty-two years of age, presented himself at the clinic of the Jefferson Medical College, on the 30th of October, 1861, on account of bony anchylosis of the left knee, the leg being flexed at nearly a right angle with the thigh. Nine years previously, while mowing, he accidentally opened the joint with a scythe, and the injury was followed by violent inflammation and constitutional disturbance. During his prolonged confinement, the limb was unfortunately placed in a bent position, in which it became stiffened, compelling him to use a crutch. There was no deformity of the joint, and a scar marked the site of the original wound.

The diagnosis was synostosis of the knee, and was based on the following points: absolute immobility succeeding traumatic inflammation; a fixed state of the patella; a sensation to the touch of thorough consolidation of the articulation; no tension nor resistance of the flexor muscles on attempts at forcible extension; and freedom from pain both in front of and behind the joint during similar efforts.

The nature and perils of the operation proposed for the relief of the deformity having been fully explained to the patient, and his entire consent having been gained, Professor Gross proceeded as follows: Chloroform having been administered, a longitudinal incision, hardly one-half of an inch in length, was made over the outer surface of the knee, near its middle, in a line with the groove between the head of the tibia and the external condyle, down to the two bones. Through this opening a steel perforator was introduced, keeping it as nearly as possible in the direction of the line of the articulation, and passing it on to the opposite side until the point could be felt beneath the integuments. The instrument was now moved

about in such a manner as to cut through and break down the osseous adhesions between the femur and the tibia on the one hand, and the femur and patella on the other. The union between the bones was exceedingly firm; but, after much difficulty, they were finally overcome, and, by forcible extension of the limb, the parts yielded with a cracking noise. The small wound was carefully closed with two twisted sutures and strips of collodion plaster, confined by a compress and a roller carried from the toes to the middle of the thigh. The leg was brought to an angle of about 45° with the thigh, and laid in an easy position upon its outer surface, a thick pillow being placed behind the knee. No blood was lost in the operation, and, as the patient was fully chloroformed, not a particle of pain was experienced. Half a grain of morphia was given as soon as the effects of the anæsthetic had passed off, and recumbency, light diet, and cooling drinks enjoined.

No constitutional disturbance followed the procedure; the entire immunity from suffering being doubtless due to the fact that the natural structures of the joint had been completely destroyed. For four days the limb was allowed to remain perfectly quiescent, when an extending apparatus was applied, and the limb was straightened daily several degrees. At the expiration of three weeks the patient was allowed to go about on crutches; the dressings having been removed on the tenth day, when the wound was found to be perfectly united, and the pins were removed. In the sixth week the man was discharged well. At this time, the ruptured surfaces were thoroughly consolidated, the knee being very slightly flexed, and the limb shortened one inch, it having been deemed an advantage in progression to have some shortening of the affected member.

CASE II.—A young lady, twenty-five years of age, consulted Professor Gross, in May, 1866, on account of complete osseous ankylosis of the right knee, caused by an injury received in jumping rope sixteen years previously. The joint was enlarged from dropsical swelling, and, at times, intensely painful for the next four years, when the spine became so seriously affected as to absorb all her other suffering. The disease of the spine was seated in the dorsal vertebræ, and was evidently of a strumous nature. It was followed by a considerable degree of posterior angular curvature.

Until the age of sixteen, although the inflammation of the joint had subsided, she was unable to bear any weight upon the limb. The knee was completely stiff, and the leg was bent at nearly a right angle with the thigh, the foot being eight inches from the ground as she stood up. The muscles of the calf were considerably wasted, and the temperature of the limb was less than in the normal state. The gait was very awkward, and progression difficult and fatiguing. The general health was good.

Under chloroform, an incision, one-third of an inch in length, was made over the inner surface of the knee, and the operation conducted as in the preceding case. The disruption of the osseous tissue with the perforator being, however, slow and difficult, the instrument was withdrawn, and a narrow, sharp-pointed chisel substituted, with which the desired object was gradually effected. The puncture was hermetically sealed as before, and the position of the limb after the operation was the same as in the first case.

Some traumatic fever ensued, but it was very slight, and speedily disappeared under a mild aperient administered the morning after the operation. The diet was light, and the drinks were cooling. The joint was tender for several days, and when the dressings were removed at the end of a fortnight a little pus was found upon the wound, the edges of which were thoroughly united. The young lady went home a week later, walking

with the aid of crutches; the knee, still a little tender and swollen, was washed twice daily with warm water and castile soap, and then well rubbed with a sorbefacient liniment, a bandage being used in the interval. At the end of four months progression was performed without artificial assistance, a privilege denied for sixteen years.

A letter received from this young lady, January 5, 1868, says: "The limb is well and strong, and lacks only one inch of being as long as the other. There is no motion at the knee, but I have become so accustomed to it that it seems to me I have no use for a joint. I can easily walk two miles on a stretch."

CASE III.—Joseph Z., twenty-two years of age, was admitted into the hospital of the Jefferson Medical College, in October, 1866, with synostosis of the left knee, the leg being flexed at such an angle with the thigh that the distance between the heel and the corresponding buttock was only seven and a half inches. The integuments over the lateral and anterior portions of the articulation were much scarred, indurated, and immovable, and presented the cicatrices of old sinuses. The hamstring tendons were contracted, and very prominent. The general health was not good; he was emaciated; his complexion was sallow; and he occasionally suffered from attacks of malarial fever.

His own account of the injury was as follows: While serving as a marine in the U. S. Navy, at Fort Fisher, January 18, 1865, he was wounded in the left knee by a grape-shot, which struck him when lying down, near the inner condyle of the femur, and passed through the articulation. He was sent to the Portsmouth Naval Hospital, whence he was discharged on the succeeding 28th of June, with the knee perfectly stiff and bent at the angle above described. Afterward, there was a constant discharge, and, from time to time, pieces of bone came away, the last making its exit in June, 1866. The sinuses then closed, and he applied to Professor Gross in August for the relief of the deformity, the limb being not only useless, but a positive incumbrance.

Chloroform having been administered, the tense and contracted tendons of the hamstring muscles, along with several bands of thickened fascia, were divided subcutaneously as a preliminary measure, then the adhesions between the articular surfaces of the bones of the joint were broken up with the perforators. The dressings and the position of the limb after the operation were similar to those employed in the preceding instances.

For ten days the patient progressed in the most satisfactory manner, when violent traumatic fever, with profuse suppuration of the joint, ensued. Several of the old scars opened, and for three weeks his condition was somewhat critical. The limb was maintained in an easy position on pillows, and fomented with lead water and laudanum, while iron, quinia, morphia, and whiskey, were freely administered internally. All inflammatory symptoms having subsided, the extending apparatus was applied, and about ten weeks after the operation, the knee was straightened sufficiently to enable him to rest on the ball of the foot, which was all that could be desired. The heel was elevated nearly two inches; but it was proposed to remedy this by division of the tendo-Achillis, to which, however, the man would not consent. He walked readily with the aid of a cane, and there was a very slight degree of motion perceptible at the knee.

A letter received from Dr. C. L. Duffell, January 29th, 1868, says:—

"I saw your patient, Joseph Z., last evening. The knee is firm. The heel has come down so that, when the ball of the foot is on the ground, it is elevated

an inch, about enough I suppose to allow for the angle of the knee. I do not perceive any unusual amount of rigidity of the tendo-Achillis. The young man worked on a farm all last fall, performing the usual labours pertaining to that occupation; but he is now teaching school, and walks as much as four miles every day, without difficulty at the time or inconvenience subsequently."

CASE IV.—William K., twelve years of age, was admitted into the hospital of the Jefferson Medical College, in October, 1867, on account of bony anchylosis of the left knee, with the limb at a right angle. In the winter of 1865, the joint was injured by a fall on the ice, and became the seat of intense inflammation, followed by suppuration and destruction of the normal textures. The hamstring muscles were much contracted, their tendons being very tense and prominent, and there was a large number of scars on both sides of the articulation. The integuments had lost their elasticity, and were firmly adherent to the subjacent parts. The femur, tibia, and patella, were completely fixed; the joint was immovable and misshapen, and presented somewhat the appearance of posterior subluxation. All traces of inflammatory action had disappeared.

On the 30th of October, the boy having been placed under the influence of chloroform, the hamstring tendons and some bands of resisting fascia were divided subcutaneously; the bony adhesions broken up by means of a perforator and a chisel inserted through a small incision on the outer side of the joint, and the parts then liberated by forcible manual extension. Two twisted sutures were introduced, and the opening hermetically sealed by strips of lint saturated with collodion, after which a roller was lightly applied from the toes to the middle of the thigh, and the limb placed on pillows in an easy position.

At the expiration of one week, the report states: "Beyond a slight evanescent sympathetic fever, there has been no trouble whatever. He has taken a little citrate of magnesia, and been kept on light diet. His appetite is excellent, and he sleeps well. The collodion dressing is still firmly adherent; but no efforts have been made to extend the limb, from the failure of the instrument-maker to furnish the proper apparatus." On the eleventh day, the extending splint was applied, and the leg gradually brought down to a proper position. On the 7th of December, when the lad returned home, the knee was nearly straight, and he walked with the support of one crutch. A very slight degree of lateral motion was perceptible; but the union was firm on the 2d of February, 1868, when he moved about without artificial support.

An examination of the preceding cases will show that in all the anchylosis was osseous throughout, and that inflammatory action had entirely ceased. Under opposite circumstances, the operation would not be justifiable, since a lethal inflammation would, in all probability, be excited. It is, therefore, of the last importance that the surgeon should convince himself of the form of anchylosis with which he has to deal, before he proceeds to undertake the operation.

The most valuable signs of synostosis are flexion, complete immobility, and freedom from pain, under rough attempts to move the articulation. Immobility, of itself, is of little importance as a diagnostic aid, since it may be just as great in false as in true anchylosis; but chloroform affords the greatest assistance in arriving at a correct conclusion. In the former

event, a joint which was firmly fixed, yields and admits of some degree of motion; whereas, when the anchylosis is osseous, the articulation is as inflexible under chloroform as when examined without that agent. In false anchylosis, moreover, when there is any degree of mobility, the patient experiences much pain on attempts at extension, and there is more or less resistance of the opposing muscles, as evinced by their tension and rigidity. When, on the other hand, the anchylosis is bony, rough handling is borne without flinching, and the muscles are perfectly passive. Finally, when traumatic inflammation has preceded complete loss of motion, particularly if the latter be of long standing, it may safely be assumed that osseous anchylosis exists, and this conclusion will be strengthened if the joint is comparatively little swollen, and conveys to the touch the sensation of consolidation throughout.

The general health of the patient at the time of operation is a matter of paramount importance, as it exerts a powerful influence upon the result. This is well shown in Case III., where the subject of the procedure was sallow and emaciated, and suffered from malarial fever contracted in the U. S. Navy. Severe local inflammation and traumatic fever set in on the tenth day, and, for three weeks, his condition was somewhat critical. Under appropriate measures, however, he ultimately recovered with an excellent limb. In Case II., the patient was of a scrofulous habit, and her system was somewhat debilitated by long confinement. The resulting constitutional irritation was extremely slight and evanescent, and the joint was merely a little swollen and tender for several weeks. These symptoms could only be referred to the presumed fact that the synostosis was not complete; but there was no escape of synovia to indicate that such was really the case.

The mode of conducting the operation is sufficiently apparent from the details given in the first case; but it must be borne in mind that the interior of the obliterated articulation is to be reached by introducing the perforator in a line with the natural interspace between the head of the tibia and either condyle, as may be most convenient. The connections of the patella with the femur and tibia are readily broken down and its disjunction greatly aided by using the instrument as a lever, through which it may be forcibly elevated. To avoid as much as possible the contact of the air with the osseous wound, the small incision must be closed hermetically by two twisted sutures and strips of lint saturated with collodion. The pins are permitted to remain until the dressings have become completely loose, when the wound will be found to be united.

The perforator, or drill, with which the operation is conducted is represented, greatly reduced, in the subjoined cut, kindly furnished by the skillful cutler, Mr. Gemrig, of this city. It consists of a shaft of well-tempered steel, four inches and a half in length, the point of which is one-sixth of an inch in breadth, and presents on each side an oblique groove with cutting edges, so that it acts as a drill and a gouge. This is fitted into a firm or a movable handle, its proximal extremity being large and rounded, so as

to rest comfortably in the palm of the hand. This instrument is employed by cutlers to drill ebony, and will usually be found to answer admirably for breaking down and cutting through bony ankylosis. In some cases, however, it may advantageously be replaced by a chisel, three lines broad, the point of which is bevelled and slightly blunted. Whatever form of instrument be used, great caution must be exercised in operating on the posterior surface of the joint, lest it slip and injure the popliteal artery. Although this accident has not occurred, it is well for the surgeon to remember that the vessel is endangered by a careless use of the perforator.

In two of the cases here reported, the inner and outer hamstring tendons, along with some bands of fascia, were so much contracted that their subcutaneous division was imperatively required, as a preliminary measure. This operation should not, however, be executed unless the condition of these structures demands it.

The management and position of the limb after the operation call for brief notice. A roller having been applied from the toes to the middle of the thigh, the limb is supported by pillows in an easy position on its outer surface. At the expiration of four or five days, when the small punctures made by the tenotome may be expected to have closed, provided neither traumatic fever nor local difficulty has disclosed itself, an adjusting apparatus, on the principle of McIntyre's splint, is applied to the posterior surface of the thigh, knee, and leg, by means of which the limb is extended daily several degrees, until it is brought at the proper angle for future usefulness. Through gradual extension, the muscles, fasciæ, nerves, bloodvessels, and lymphatics, the positions and relations of which have necessarily become altered by the malposture of the limb, are not subjected to the hazards of immoderate stretching or rupture, as might occur if the extremity were at once brought nearly straight. When the ankylosis is of long standing, this precaution cannot be too rigidly enforced; whereas, in recent cases, extension may be conducted more rapidly, or, when practicable, the knee may be brought to a proper angle at once.

The aim of the surgeon should invariably be to procure firm bony union and such a position of the limb as shall secure the greatest amount of usefulness when the recovery has been perfected. When one knee is stiff, it is a very decided advantage in progression to have some shortening of the affected extremity; hence the knee should be brought at such an angle that the shortening will amount to about, but not more than, one inch when the patient stands erect. This was effected in all of the cases here detailed.

The procedure of Professor Gross was practised by Dr. F. F. Maury, at the Philadelphia Hospital, in May, 1867. The patient, a man thirty-seven years of age, had received at the battle of Chancellorsville, three years



previously, a shell wound of the right tibia, which involved its tubercle. Synostosis of the knee, with the leg flexed at nearly a right angle, ensued, for the relief of which Dr. Maury broke down the adhesions by means of the perforator and chisel, tenotomy and forcible efforts at extension having previously failed. At the expiration of three months, the man had recovered with an excellent limb.

The results of this mode of treatment are of the most satisfactory nature, all of the five patients subjected to it having recovered with a useful limb. In the first case, the man was able to be about on crutches at the end of three weeks, and to walk without artificial aid in three weeks more. In the second, crutches were used at precisely the same date, but the young lady was unable to move about without their assistance until the expiration of four months. In the third case, the patient was on crutches in five weeks, and walked without them in ten weeks; and in the fourth, crutches were used in a fortnight, and the lad dispensed with them entirely in seven weeks. In the case of Dr. Maury, dates upon these points are wanting. The mean duration of confinement in bed was, therefore, twenty-three days, and the average length of time at which the patient was able to walk without artificial aid, ten weeks. It will thus be perceived that the duration of treatment was no longer than that required for the cure of a simple fracture of the thigh.

Subcutaneous perforation and disruption of angular synostosis of the knee, for the relief of the deformity arising from it, is, for the following reasons, recommended as a substitute for all other operations:—

1. Being a subcutaneous procedure, it is, on that account, far less hazardous than the operations of Barton and Buck, which are a species of compound fracture, and, therefore, liable to all the dangers and accidents which attend that injury.

2. The shortening is far less than that resulting from any of the other methods of cure, this, indeed, being entirely dependent upon the pleasure of the surgeon. Shortening of one inch is, however, advised, since it renders locomotion less awkward.

3. It occasions no unsightly deformity at the knee itself, beyond flexion at a very slight angle. Both Brainard's and Barton's operations, more particularly the latter, are attended with an ugly deformity, from the knee being rendered unusually prominent by bending the limb at the point of fracture of the femur. Although Buck's procedure leaves a more symmetrical limb than either of these methods, this advantage is counterbalanced by the protracted sufferings, undue shortening, and greater mortality resulting from it.

4. The duration of treatment is much shorter, thereby subjecting the patients to less inconvenience and annoyance from prolonged confinement in the recumbent posture.

5. The object of the operation being to break down and weaken the osseous bands in such a manner as to permit them to be fractured with a

moderate degree of force, the popliteal artery is not endangered. In one of the cases by the method of Barton, the femoral artery had to be taken up on the thirteenth day, on account of bleeding from the popliteal, which had been injured by a sharp point of bone.

The reporter has thus referred to twenty-six cases, and given the details of four, of synostosis of the knee at a faulty angle, relieved by surgical interference. Four only of the entire thirty were fatal, thereby affording a mortality of 13.33 per cent., and showing, contrary to the assertions of some eminent surgeons, that such a condition is remediable without great risk to life. When it is remembered that angular osseous ankylosis is always awkward and annoying, and renders the limb useless and often so much of an encumbrance as to demand from the patient a so-called "amputation de complaisance," than which no operation is more lethal, this death-rate cannot be considered excessive.

Of these 30 operations, 13 were performed after the method of Barton, of which 2, or 15.38 per cent., were mortal; 8 were practised after the method of Buck, and of these 2, or 25 per cent., ended in death; 4 were of the nature devised by Brainard, all of which were successes; and 5 were after the method described in this paper, all of which likewise recovered. The first twenty-one, partaking, as they did, of the nature of compound fractures, alone furnished the mortality, thereby affording additional evidence of the superiority and comparative innocuousness of subcutaneous operations.

PHILADELPHIA, February 4, 1868.

ART. VI.—*On the Parasitic Forms Developed in Parent Epithelial Cells of the Urinary and Genital Organs, and in their Secretions.*

By J. H. SALISBURY, M. D. (With thirty-four illustrations.)

THE parent epithelial cells, lining the genital and urinary organs, under certain conditions, afford a fertile soil for the development and propagation of some low cryptogamic forms; and in the secretions of these parts there are occasionally found, multiplying rapidly, animal organisms of inferior types. These parasites all produce more or less irritation, deranging the physiological functions of the parent cell. Hence there is, not only excessive cell activity and secretion; but the resulting products are pathological in quantity and kind, and frequently cell death and disintegration result. The parts become irritated and inflamed with catarrhal discharge; and frequently thickened and indurated. The induration of the womb, when considerable, may sometimes be mistaken for scirrhus. The secretions are for the most part free from offensive odour; but thick, translucent, and gelatinous. They are composed of detached parent epithelial cells, and pathological mucus. In the parent epithelial and mucous cells,

and in the fluid part of the secretions, are found developing in greater or less numbers fungoid and algoid spores, and frequently embryonic filaments.

When the spores are numerous in the cells, the nucleus and granules of the normal cell are often entirely absent, being destroyed by the presence of the parasites. This is more especially the case, where the spores exist in the mucous cells (fig. 32). Under the influence of spore development, these cells tend to develop in broad filaments, with the spores arranged irregularly along the cavity (fig. 11).

As the secretions from the womb pass over the external parts, the spores frequently become planted in the cells of the external mucous membrane, where they rapidly develop, producing a most troublesome and often intense pruritus, especially at night; and if the parts be scratched to relieve this, the burning and itching are aggravated.

These parasites, under certain pathological conditions of the secretions, frequently are transplanted and develop in the tender epithelium of the prepuce and glans penis, producing there severe pruritus. The vegetation here produces minute papulæ, surrounded by an inflamed base; the epithelium becomes frequently abraded, and superficial excoriations result. This constitutes one form of balanitis. In certain states of the secretions which favour their growth, these vegetations attack the epithelium of the urethra, producing urethritis, resembling gonorrhœa.

Cryptogamic vegetation is sometimes found developing in the epithelium of the kidneys, ureters, bladder, and urethra. In such states, some forms of these parasites occasionally attack the vulva or prepuce, as the case may be, producing more or less severe and obstinate pruritus, according to the fitness of the secretions of these parts for the growth and propagation of these vegetations. If the epithelium of the urinary and genital organs be healthy, these parasites, most likely, would not become developed, unless planted there with the fermenting secretions from similar surfaces already infected; and even then but seldom. If, however, the system is out of order, and the secretions of these parts abnormal, the spores when planted rapidly multiply.

CRYPTOGAMIC PARASITES I. *Penicillium pruriosum* (Salisbury).—This is sometimes found developing in and on the epithelium of the womb, bladder, ureters, kidneys, and urethra, and occasionally in and on that of the vulva and prepuce. Its development in these parts always produces more or less irritation. When existing to any extent in the cells of the vulva and prepuce it produces severe pruritus. In the latter locality it becomes the cause of one form of balanitis. In a few instances, I have found this vegetation exciting quite severe urethritis. This plant is represented at figs. 1, 2, 3, and 4. Fig. 1, spores. Fig. 2, spores developing in a parent epithelial cell of the bladder. Fig. 3, mycelium of the fungus. Fig. 4, a fertile thread in fruit.

II. *P. glaucum*.—This species is occasionally met with in the urinary

apparatus. I have found it mainly in patients recovering from long-continued attacks of miasmatic fevers. It seems to be developed, more as a consequence of certain diseased states of the secretions, than as a cause of them. So far as I have been able to discover, it produces of itself but little disturbance.

III. *Torulus aggregatus* (Salisbury).—The individual spores of this plant when alone, or arranged in a moniliform manner, resemble the so-called torula cell (*Cryptococcus cerevisiæ*). They present, however, a very different appearance, when multiplying by duplicative segmentation and forming masses as represented at fig. 5. This vegetation is developed in and on the epithelium of the womb, producing a profuse discharge of a thick, ropy mucus; with inflammation, enlargement, and more or less induration of this organ. The spores are developed in the parent epithelial and mucous cells, and in the fluid secretions. In these cases the catarrhal discharge is copious, thick, and often yellowish and greenish. I have only occasionally met with cases of this description.

Fig. 5 represents the spores, multiplying by duplicative segmentation, forming irregular masses or aggregations of spores; fig. 6, the individual spores developing by pullulation, and resembling the spores of the *cryptococcus cerevisiæ*; fig. 7 spores multiplying by duplicative segmentation, and arranging themselves in such a manner as to form broad filaments made up of aggregated spores.

This species sometimes becomes planted in the epithelium of the vulva, where it develops, producing more or less irritation and pruritus.

IV. *Torulus catarrhalis* (Salisbury).—The spores of this plant are frequently found in the mucous and epithelial cells, and fluid secretions of the womb, producing irritation, catarrh, and gradual enlargement and induration of the organ. The catarrhal discharge is thick, ropy, and often profuse. The tough ropiness of the discharge arises from the rapid development of the mucous cells into broad, strong filaments, which become united side to side, forming a tough, gelatinous, translucent mass. The spores of this vegetation are frequently planted in the epithelial cells of the vulva, where they rapidly develop, if the secretions of these parts are in a suitable condition, producing at times a most distressing pruritus. These are transferred or extend from cell to cell along the urethra, spreading to the bladder, ureters, and epithelium of kidneys, where they produce often considerable uneasiness and irritation. They are also sometimes transferred to the cells of the prepuce and urethra of the male, where they may produce one form of balanitis, and a urethritis resembling to some extent gonorrhœa.

The spores of this plant are represented at fig. 8. Fig. 12, spores developed in a parent epithelial cell of the bladder. Fig. 10, spores developing in the mucous cells from the womb. Fig. 11, these cells developing into broad filaments; along the cavity of which are the spores irregularly arranged. Fig. 9, represents an embryonic filament. Fig. 13, the myce-

lium of the fungus, developing from the spore. Fig. 14, a mass of epithelium, scraped from the vulva, in a distressing case of pruritus. It will be seen that the epithelial cells are filled with vegetating spores of the *Torulus catarrhalis*. The lady from whom this specimen was obtained, was suffering with severe catarrh of the womb. The catarrhal discharge contained very many spores of this fungus, and the spores were largely developed in the parent and mucous cells that escaped in the catarrhal discharge. The womb was enlarged, inflamed, and indurated; and the discharge was ropy, gelatinous, and profuse.

The disease yielded quite readily under the influence of free syringing with solution of bi-sulphite of soda morning and evening, after which dilute citrine ointment was applied, and tr. ferri chlorid. given internally in twenty drop doses two hours after each meal.

V. *Botrytis infestans*.—This fungus produces the so-called *potato rot*. It is occasionally found in and on the epithelium of the urinary organs, where its presence and development produce more or less irritation; and the urine contains, in greater or less quantity, the spores (figs. 16 and 17). The forms represented at fig. 16 are characteristic of this vegetation. In the mucous and epithelial cells in the urine, the spores of this plant will be found (fig. 15). In two of my patients, where this plant was largely present, there occurred severe attacks of erysipelas, accompanied and followed by profuse and protracted *hæmaturia*, which in one of the cases continued for over a year after the erysipelas passed away. During the continuance of the *hæmaturia*, the *B. infestans* was present in the urine. This, with the hemorrhage, gradually disappeared, under the influence of the constant administration of tr. ferri chlorid. The patient is now a strong, stout man, in perfect health. I have met with several cases where this vegetation produced severe pruritus of the urethra and vulva.

VI. *Zymosis utero-catarrhalis* (Salisbury).—This is found in multitudes in the parent epithelial cells and secretions of the womb, in uterine catarrh. That its rapid development acts as an irritant there can be no doubt; but to what extent it may operate as a cause of the catarrhal inflammation and discharge is not known. The spores and filaments of this plant are represented at fig. 19.

VII. *Z. angularis* (Salisbury).—This is occasionally met with in and on the parent epithelial cells of the urinary organs. Its presence produces considerable irritation of the bladder, often with some little catarrhal discharge. The inside tube of the filament is interrupted at irregular intervals, and at these interruptions the filament frequently is abruptly bent, forming more or less obtuse or acute angles; hence the specific name. When this plant is developed in the urinary apparatus, the filaments are found in the freshly voided urine, either singly or in bundles or knots. The spores and filaments are represented in fig. 18.

VIII. *Z. oscillans* (Salisbury).—This occurs frequently in the parent epithelial cells and mucous secretions of the urinary apparatus; and the

spores and filaments are found in greater or less quantity in the freshly voided urine. The embryonic filaments and spores are usually very active. The young filaments move rapidly in every direction with a vibrating motion, hence the specific name. This plant is represented in figs. 20 and 21. Where it is found largely in the urinary apparatus, there is usually a feeling of weight, an aching or uneasiness in the bladder; with a tired, languid feeling pervading the system. The embryonic filaments are either moniliform or have cross markings at short intervals. In the mature filaments the cross markings are obscure and often imperceptible.

IX. *Z. gracilis* (Salisbury).—This vegetation I have occasionally met with in the urinary organs in Bright's disease. The spores are very minute and the filaments very slender, with interruptions in the inside tube at regular intervals, producing the appearance of cross markings. I do not know that it produces any disturbance by its presence; though the probability is, that it does. Whether it acts as a cause or consequence of certain pathological states, is not known. The spores and filaments of this vegetation are represented at fig. 22.

X. *Z. elongatus* (Salisbury).—This I have only occasionally met with in the urinary organs; and when present there has always been more or less distress in retaining and voiding urine. The illustration, representing this plant, was drawn from the freshly voided urine of a Mr. E., of Cleveland, who had been suffering very much in retaining and voiding urine for the last twelve years. He had been repeatedly sounded for stone, but none found, and treated for gravel without benefit. This vegetation occurred in large quantity in this patient's urine. With it was a little stelline. The urine was light-coloured and had a density of about 1.020. This plant is represented at fig. 24.

XI. *Z. phosphaticus* (Salisbury).—This occurs quite frequently in phosphatic urine. The filaments are united frequently by a thin film or transparent membrane; which is a characteristic peculiarity. Whether it is a cause or simply the consequence of pathological states, is not known. The spores and filaments are represented at fig. 23.

XII. *Sarcina cystica* (Salisbury).—This may be the same as the *S. ventriculi*, which is found so often in the stomach. It appears to be, however, smaller, and tends to develop by segmentation, more in one direction than in the other, producing rows of cells, that at one end are frequently bent (fig. 33); on account of this apparent difference I have given it the specific name, *cystica*. I have found this plant in quite a number of cases in the urinary apparatus. Its presence seems to produce more or less irritation. It is represented at fig. 33.

XIII. *Spharotheca pyra* (Salisbury).—This plant, which produces the blight in the apple, pear, and quince trees, and the rot in their fruit, is occasionally met with in the urinary organs. I have not been able to discover that it produces much disturbance. Its presence and propagation

in these parts is probably more a consequence than a cause of certain pathological states.

XIV. *Crypta irregularis* (Salisbury).—This is met with in cases of ulceration of the urethra and bladder, arising from severe and long continued venereal disease. The vegetation is voided with the shreds and ropes of muco-pus, that are passed in such cases. It is represented in figs. 25, 26, and 27. Figure 25 represents the spores, and figs. 26 and 27 the filaments.

The filaments are more or less irregular in diameter, having usually somewhere in their course bulbous dilatations. In advanced stages of development, they are quite homogeneous throughout their entire length. In earlier stages of growth, they exhibit transverse markings at tolerably regular intervals (fig. 26). The filaments represented at fig. 26, are from an ulcerated urethra, in a severe case of gonorrhœal inflammation, complicated with a urethral chaneroid, where the disease had been allowed to run two weeks without treatment.

The plants, represented in fig. 27, are from a young man who had suffered for several years, almost constantly, with gonorrhœal and chaneroid diseases. In both these cases, considerable blood was voided with the pus.

ANIMAL PARASITES. I. *Trichina cystica* (Salisbury).—This is a small species of trichina, which I have found in the human bladder. In all my examinations, I have met with this little entozoon in three cases only. In two of these it was only occasionally met with in the urine. In the other, a Mrs. R., of Cleveland, it occurred in great numbers. Frequently from ten to fifteen ova were found in a single drop of urine. The eggs, containing the animal in various stages of development, are represented at figs. 29 and 30. These are magnified 300 diameters. The animal magnified about 1000 diameters is represented at fig. 31. This patient was an old lady, aged about 65. She had cystinic rheumatism, and was partially paralyzed, and had been insane for several years. She was labouring under severe cystinemia, which was regarded as the main cause of the rheumatism and paralysis. When this patient came into my hands, there was from five to fifteen ova (figs. 29 and 30) in every drop of urine voided. Her urine was passed milky, with granular cystine, and was dense and scanty. There was partial paralysis of the bladder, so that her water was constantly dribbling from her. The surface of the body, and especially the limbs, were covered with purple spots, from one to six lines in diameter. Around the ankles, these spots, some weeks before death, became gangrenous and sloughed, leaving offensive sores. The blood was black and thick, and the pulsations slow and irregular. Heart sounds normal. No examination was made of the muscles after death to determine whether this species burrowed in this tissue, like the *spiralis*.

It may be interesting to state here the singular fact, that all of the members of this family for several generations back, at about the age of 60, have gradually become insane, and at the same time affected with chronic rheu-

matism and with more or less paralysis. All the younger members of the family are in constant dread of arriving at this age, as they seem to be impressed with the idea that they are all to go in the same way.

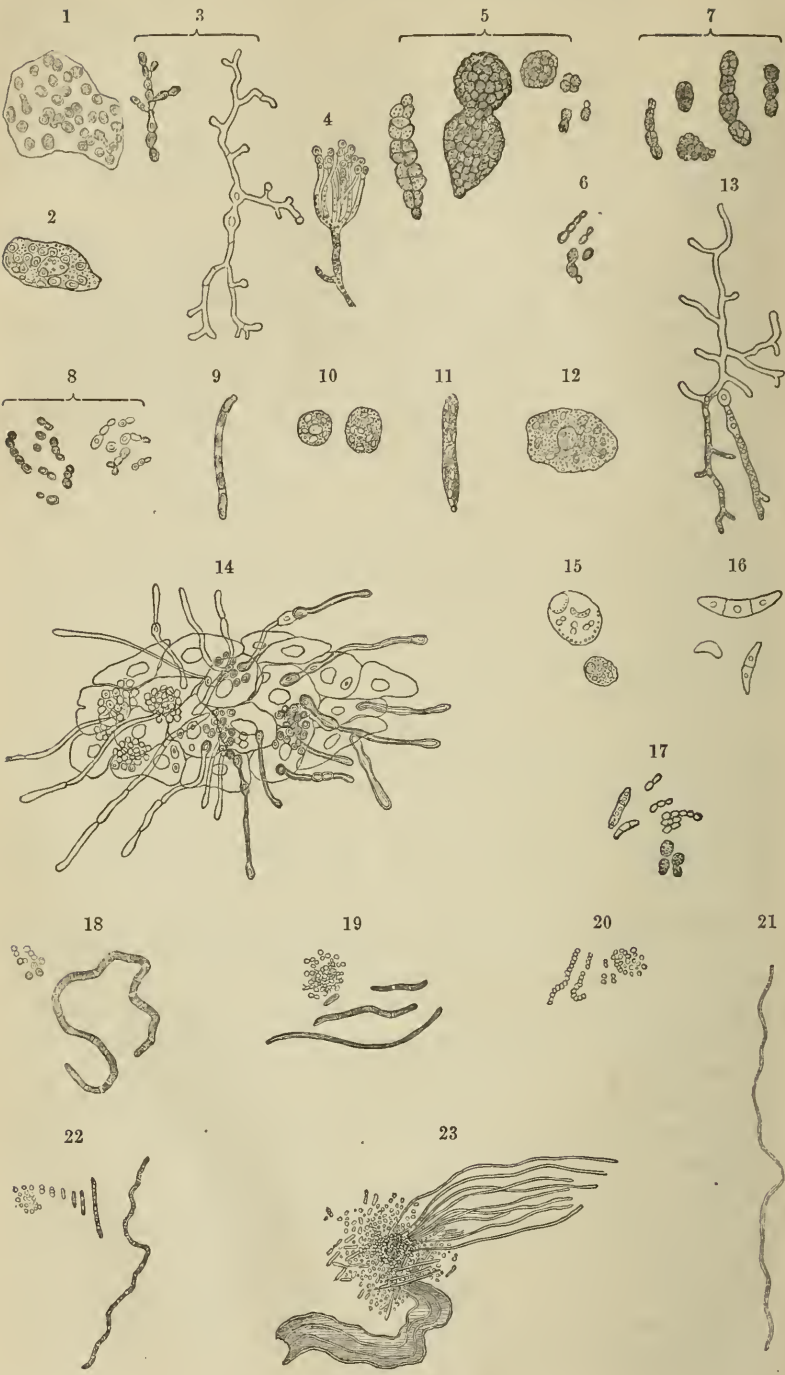
II. In a few instances I have met with a species of *vibrio*, resembling that found in vinegar, in the freshly-voided urine. In all cases where I have found this little animal in the urine, the patients have been debilitated and the urine rancid and fermenting.

III. *Trichomonas vaginæ*.—This little organism occurs occasionally in the vaginal secretions, and sometimes is found in the bladder. It is very active, and produces considerable irritation when abundantly present.

IV. *Ciliaris bicaudalis* (Salisbury).—This organism is smaller than the *T. vaginæ*, and very different in appearance. It is represented at fig. 28. It consists of a single cell, slightly oval, and having two hair-like caudal prolongations. These caudal appendages are situated directly opposite each other, going out in the direction of the longest diameter. The appendages are about twice the length of the longest diameter of the organism. A peculiar characteristic of this animalcular form, is the short, thickly set, ciliæ, all of equal length, which completely cover the cell. These are in constant and rapid motion, while the two long caudal appendages move with a slow, undulating vibration. This parasite is occasionally met with developing rapidly in the secretions of the womb and vagina, and sometimes, in such cases, is met with in the bladder. Wherever it occurs, it produces more or less irritation.

V. *Trichomonas irregularis* (Salisbury).—This species was found abundantly in the urine and vaginal secretions of a Miss W., who, since her arrival here from Germany (ten months ago), has become very fleshy, and has been attacked with peculiar paroxysms, that appear to be between cataleptic and epileptic. They occur almost every night and morning. These parasites occur in large numbers in the urine and vaginal secretions.

The patient is 16 years of age; courses scanty; cheeks rosy, and she appears to be in good health, but her blood is thin and ropy, and she has considerable *cystinemia*. The body of this parasite is smaller and more variable in size and shape than the *T. vaginæ*. It has, as far as I have examined the individuals, always two caudal prolongations arising from the same point, and usually has the beak at the opposite end of the cell. The caudal prolongations are about three times the length of the longest diameter of the cell, which is in the same directions as the hair-like prolongations. No ciliæ occur on the body, as is the case with the *Ciliaris bicaudalis*. Occasionally the beak is almost entirely drawn in or retracted. The body is frequently much elongated and irregular, sometimes regularly oval, at others almost spherical. There is an internal motion in the digestive apparatus, which is a progressive current moving around in a circle, a little posterior to the centre of the organism. Fig. 34 represents the parasite magnified 300 diameters.





EXPLANATION OF FIGURES.

- FIG. 1.—Spores of the *Penicillium pruriosum*, from the bladder and vulva. FIG. 2, spores of same developing in a parent epithelial cell of the bladder. FIG. 3, mycelium of same from the bladder. FIG. 4, fertile thread bearing spores of same from the bladder.
- 5, 7.—Spores of the *Torulus aggregatus*, developing by duplicative segmentation from the womb in uterine catarrh. FIG. 6, spores of same from the womb, developing by pullulation.
- 8.—Spores of the *Torulus utero-catarrhalis*, from the womb in uterine catarrh. FIG. 9, spore of same developing into a filament from the discharge in uterine catarrh. FIG. 10, spores of same developing in the mucous cells of the womb. FIG. 11, the mucous cells (fig. 10) developing into broad filaments filled with spores of the *T. utero-catarrhalis*.

- 12.—Spores of the *T. utero-catarrhalis*, developing in a parent epithelial cell of the bladder. Fig. 13, mycelium of same developing from the spore.
 - 14.—A mass of epithelium, scraped from the vulva, in a distressing case of pruritus. The epithelial cells are filled with vegetating spores of the *T. utero-catarrhalis*.
 - 15.—Spores of the *Botrytis infestans*, developing in the mucous cells from the bladder. Figs. 16 and 17, spores of same from the urinary organs.
 - 18.—Spores and filaments of the *Zymosis angularis* from the bladder.
 - 19.—Spores and filaments of the *Z. catarrhalis*, from the womb, in uterine catarrh.
 - 20, 21.—Spores and filaments of the *Z. oscillans* from the urinary organs.
 - 22.—Spores and filaments of the *Z. gracilis* in the urine in Bright's disease.
 - 23.—Spores and filaments of the *Z. phosphaticus* from phosphatic urine.
 - 24.—Spores and filaments of the *Z. elongatus* from the urinary organs in a case of irritable bladder.
 - 25, 26, 27.—Spores and filaments of the *Crypta irregularis*, from the urethra and bladder, in ulcerations of these parts produced by venereal disease.
 - 28.—*Ciliaris bicaudalis*, a minute animalcular parasite found developing occasionally in the female genital organs.
 - 29, 30.—The ova of the *Trichina cystica*, found occasionally developing in the human bladder, magnified 300 diameters. Fig. 31, the parasite, after its escape from the egg, magnified about 1000 diameters.
 - 32.—Mucous cell of the womb, with its granules destroyed by the presence and development in it of spores.
 - 33.—*Sarcina cystica* from the human bladder.
 - 34.—*Trichomonas irregularis* magnified 300 diameters.
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ART. VII.—*Case of Derangement Limited to a Single Moral Sentiment Occurring Periodically, that Sentiment being in a Perfectly Normal Condition during the Intervals.* By SAMUEL JACKSON, M. D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania, etc.

IN May, of 1833, I joined a party of relatives and friends who were making a tour to the Southern States; we stopped in Baltimore for a night; in the evening I was consulted by the wife of one of the gentlemen, Mr. D., respecting a peculiar disease with which he was affected. For three years every alternate Wednesday he was morally prostrated from a loss of his self-esteem, believing himself to be unworthy as a husband, or the father of his children, or a member of society. This condition continued for a week, and on the ensuing Wednesday he awoke restored to his natural character, associating with his family, attending to his official duties, receiving and visiting his friends; all of which he refused to do when under the influence of his disease.

This was on a Tuesday evening, the day before the renewal of the usual paroxysm, and I was requested to prescribe some means which might prevent its recurrence. After some little reflection I determined upon the application of cups to the back of the neck, abstracting six or eight ounces of blood, a hot, sinapised foot and leg bath at bedtime, and a pill composed

of camphor gr. ij and ex. belladonna gr. $\frac{1}{4}$. The next morning, to the agreeable surprise of all the party, there was no return of the paroxysm, for the first time since his attack. After visiting Washington and Mount Vernon I returned home, whilst my companions pursued their way to Richmond.

In the following November I received a letter from Mrs. D., informing me that the paroxysms had returned before they reached home, and wished to know if I thought it was in my power to give her husband permanent relief. I replied that I could form no opinion on that subject, as the case was entirely new, and I was without any experience as a guide, but if they could come to this city I would undertake his treatment. In a few weeks after they took up their quarters in Philadelphia. When I made an examination of his head I found it to be perfectly formed, without being marked by any protuberances; but at the vertex was a small depression about an inch in diameter and two lines in depth, similar, to a small watch glass. I endeavoured to investigate the cause of his mental condition, but could find nothing to explain it except the existence of insanity in the family. In his natural character he was remarkably mild, affable, pleasant, easy in circumstances, holding the respectable office of clerk in a United States District Court, mingled in the best society; was happy in his conjugal relations, and his children were of fine promise.

Without any apparent cause, being perfectly well when he went to bed, he awoke one morning with a total loss of his self-esteem, as before described. His desire was to be left entirely alone, he refused to mingle with his family, would not receive or visit his friends, or attend to his office; he would go out for exercise only after dark, so as not to be recognized. From this period such had been the tenor of his life for three years, during which time he had visited Europe for several months, to obtain any benefit which might arise from change of scene and for the purpose of obtaining medical advice. He returned home unchanged in his state; one week was passed under the moral depression of a supposed state of degradation, the other in his natural character.

I ordered, from my examination, the top of the head to be shaved, and applied a moxa to the depression, and formed an issue by irritative dressings. A light regimen was directed; a pill prescribed of camphor gr. j, ex. belladonn. gr. $\frac{1}{8}$, to be taken twice a day, and also the occasional use of two or three cups on the back of the neck. This course was steadily pursued throughout the winter without producing any other effect upon the condition of the patient than some little derangement in the order and intensity of the paroxysms. Early in May he had an unusually violent attack; when it had passed away he expressed a desire for me to procure him a room where he could be left alone with books and papers, as the presence of his wife and the people of the house increased his moral distress and mental depression. This arrangement was made and a room procured in the

vicinity of the city, but was rendered unnecessary by the sudden cessation of the paroxysms, which, from this time, returned only at long intervals and for a short time.

He continued, with the exception mentioned, in his normal character through the whole summer and until the beginning of the next winter. In the latter part of August he visited Cape May, where he made many friends by his affable deportment, and at a political meeting held there, he was nominated as chairman and made a speech on the occasion. This circumstance is mentioned to show how complete was his restoration. He subsequently visited Bedford Springs and the interior of the State, and returned to this city the last of September. He had become very anxious to return home; I endeavoured to dissuade him from that course, representing the danger of a relapse from a return to all his old associations, but could only procure the delay of a few weeks. He, however, made a visit to New Bedford before he returned to his home and pursuits.

In the course of two or three months after his return he awoke one morning with an attack of mental derangement. He declared that he had ascertained a distinguished statesman to be a traitor and plotting the overthrow of the government, and it was his duty to immediately inform the governor and have him arrested. In a few days it was found necessary to send him to the asylum at Charleston, Mass., where he died in the course of three or four weeks.

I received a letter from his father communicating the result of a post-mortem examination of his brain. The lesion, if it may be so termed, was confined to the arachnoid membrane, at the vertex of the brain, immediately under the depression in the skull; it was thickest in the centre, gradually diminished, and ceasing at some little distance from it.

This case, it appears to me, establishes two important facts: the first, the independence of the MORAL SENTIMENTS in a manner similar to that of the mental faculties is, I think, demonstrated by the fact of a single moral sentiment being diseased for nearly four years; the second, that in monomania intermissions may occur.

ART. VIII.—*Amaurosis of the Right Eye relieved by the Removal of the Filling from a Carious Tooth of the Corresponding Side, and its Final Cure by the Extraction of the Tooth.* By M. F. DE WITT, M.D., of Whitehall, Illinois.

MR. J. P., a merchant, æt. thirty-one, of good constitution, and health always excellent, in the month of June, 1856, while in the act of firing his gun, first discovered that he was blind in the right eye. He had no pain in the eye at the time, nor subsequently, neither were there any spectral illusions. Vision was lost without his being able to ascribe it to any cause.

In this condition the eye remained for nearly twelve years ; he could merely discriminate light from darkness, but nothing more. On the 24th day of December, 1867, while conversing with him, I inquired as to the condition of his eye, and at the same time endeavoured to ascertain the probable cause of the malady. Directing my inquiries to the teeth, I learned that some two months before his loss of sight, he had had several teeth filled, and that not long after he had one of these teeth extracted, in consequence of its aching. The other teeth had never given him any trouble. Upon examination I found a large cavity in the first bicuspid of the right upper jaw, which had been neatly filled with some kind of white metal. There was also a fistulous opening upon the alveolus opposite that tooth, and, no doubt, extending to its fang. He said there had been for a long time some soreness and tenderness at this point, and very frequently an abscess formed, which he opened with his knife. Presuming that the amaurosis had its origin in an irritation of the nervous trigeminus, distributed to this tooth, I advised its immediate extraction. Mr. P., being naturally very timid, objected. I then removed the filling from the tooth, in the hope of getting a counter opening, by which I hoped the fistula might possibly close, and the irritation be relieved. This result actually occurred. The fistula closed, the soreness of the alveolus subsided, and vision gradually restored. An offensive mass came out of the tooth soon after the plug was removed. About three weeks subsequent to this (Jan. 12, 1868), when the eye had become nearly as good as its fellow, the soreness upon the gum recurred, and vision simultaneously became blurred. On the 19th day of January I extracted the tooth, when the blur immediately disappeared. At the present time, Jan. 28, 1868, Mr. P. can see quite as well with the right as with the other eye, except in the discrimination of very small objects. There was no foreign substance at the root of the tooth, its interior was filled with pus, and the communication between it and the cavity had become closed.

ART. IX.—*Progressive Enlargement of the Lymphatic Glands. "Hodg-kin's Disease."* By JOHN J. BLACK, M. D., of New Castle, Delaware.

JAMES SHOCKLY, a large well-developed mulatto, entered the medical wards of the Philadelphia Hospital, Blockley, in the early part of the month of August, 1865, suffering from enlargement of the lymphatic glands and dropsical symptoms of a more or less general character. He reported that eight weeks previously the "swellings" commenced and increased very rapidly, after he had been wet in a rain storm. His occupation had been that of a general labourer, but for some time previously to his sickness he had been engaged in a saw-mill. He bore no traces of dissipation, and said he had always been sober and industrious ; had never had syphilis or severe illness of any kind, and no hereditary taints could be traced. There appeared to be an enlargement of every discernible lymphatic gland in the body, the chains along the lower jaw, sub-occipital, axillary, those in the groins, abdomen, and other parts. The glands on the left side were all decidedly and correspondingly larger than those on the right. The left thigh and leg were very much enlarged and œdematous, the right limb slightly so. There was much fluid in the abdomen ; left side of the chest

was full of fluid, and a considerable quantity in the right side. He said these enlargements took place three days after the swellings first commenced. There was no œdema of the face or arms. Passed a normal quantity of urine, light straw colour, containing a few epithelial scales and mucous corpuscles; no albumen; chlorides abundant; bowels regular; pulse 100. Respiration 24, and much impaired, with all the evidences of effusion into the cavity of the chest, such as compression of the lungs, &c.; the right side having decidedly the least collection of fluid. The temperature was not noted. The heart sounds were entirely normal. He stated that last winter he suffered from a series of carbuncles, and during the spring from a fever called *lumber fever* (nothing more nor less than intermittent fever, and given the name of "*lumber fever*" in some parts of the west and south-west). The skin was generally dry, and appetite poor, and of course he obtained no comfortable sleep. The treatment pursued was as follows: a little elaterium at intervals, iodide of potassium, iodide of iron, cod-liver oil to be taken at his own discretion, milk punch, quinia, beef essence, eggs, beef steak, &c. In fact the best supporting treatment the house would afford, and the enlarged glands were thoroughly rubbed with the compound iodine ointment, at short intervals.

August 30. I quote from my notes. Pulse 112; respiration 41. Left leg not so much swollen as before, but right leg not much changed. Difficulty of breathing increased. Glands all decidedly smaller, but patient weaker and has lost flesh. The fluid in the abdomen has decreased; in the left side of the chest it has increased; and in the right side there is no change to note.

September 17. Glands much reduced in size. Stomach holds out remarkably well. Every particle of effusion gone from the legs. Dyspnœa nearly gone in consequence of the diminution of the fluid in the great cavities. Abdomen nearly clear of fluid. The improvement in the last two weeks has been very great, and he now wants three days' liberty to visit his family. The man returned at the appointed time, but soon commenced to lose ground rapidly, the glands enlarging again, the effusions returning, extreme prostration coming on, and on the 28th of September following, he died, about eight weeks after admission, his broken-down system having become completely exhausted.

Post-mortem twelve hours after death, Sept. 29, 1865.—Lymphatics of left groin enormously enlarged, above and below Poupart's ligament. The femoral vein obliterated by a semi-organized clot, down to the opening into the adductor magnus muscle. Saphenous and other superficial veins normal. The right inguinal glands were about two-thirds as large as those upon the left side. Here the superficial veins were normal. The arteries on both sides were normal. On the right side the femoral vein was clear, but much dilated at its upper part as though the blood had at times been backed up here. The chains of lymphatics on each side of the lower jaw were much enlarged. Left internal jugular vein very much dilated. External jugular vein of left side also much dilated. These veins on the right side very little if any dilated.

Chest.—Left side very full of a thin serous fluid. Lungs pressed back to the size of a clenched fist and carnified. Some fresh-looking lymph on the pleura in different parts. The effusion in the right cavity was much less than that in the left cavity. Right lung somewhat compressed. Some old adhesions in each lung. Azygos and hemi-azygos veins nearly or quite obliterated by semi-organized clots. The lymphatics of the neck under the

sternum running deep down, enormously enlarged and pressing on all the neighbouring parts. Bronchial glands much enlarged. Along the trachea was a mass of lymphatics enormously enlarged. On the right antero-lateral side of the trachea dipping down from the neck was an enlarged lymphatic, the size of a goose egg. Directly below this, running down to the bifurcation of the trachea, was another nearly as large. The larger contained a considerable granular mass (by the microscope), apparently tuberculous. The smaller one had several small tuberculous masses in it.

Abdomen.—Spleen slightly enlarged and full of little waxy looking bodies beautifully marked. A mass consisting of about one-half of the mesenteric glands, weighed two pounds five ounces. In all this mass there was only one very small and very hard tuberculous spot. Both kidneys of natural size, with a small hydatid in each, both decidedly granular, and resembling tough bacon-rind when stripping off the fibrous covering, which adhered very tightly and would only separate in small pieces. The urine during life showed no albumen under thorough testing. The kidneys were unfortunately made way with before they could be otherwise examined. There was a large mass of glands pressing on the primitive, internal and external iliac veins of each side. In the primitive iliac veins of each side were large pouch-like dilatations, which would admit a hen's egg. I noticed nothing abnormal about the liver, except that it looked somewhat congested; it was unfortunately lost before further examination was attempted. Perhaps the glands weighed would have amounted to about one-sixth of all the lymphatic glands of the body, therefore giving the weight of all the lymphatic glands of the body at thirteen pounds and fourteen ounces.

The brain appeared normal, except an osseous shell attached to the pia mater about the middle of the longitudinal sinus, and lying up against the side of the left hemisphere of the cerebrum. This substance was the shape of, and about half the size of a vomer. The blood appeared somewhat deficient in red globules. The supra-renal capsules were apparently normal. As directed by Virchow, we applied cautiously a little sulphuric acid to the spleen, lymphatic glands, etc., and then iodine, and in all cases got the characteristic blue colour, which caused that very distinguished authority to look upon such degenerations as amyloid in character. The microscope showed the enlarged glands to consist of numerous nucleated cells and a large amount of fibrous matter, in fact differing little from the healthy gland. The kidneys appeared to be of the lardaceous or waxy kind, but the liver did not seem to be thus affected—yet for the reason before stated they were not subjected to microscopic examination. The little waxy looking points in the spleen appeared not to differ under the microscope from the lymphatic glands themselves.

Now what is the trouble under which this man suffered? It is certainly a disease which is rarely developed to the point which it reached in this case, and concerning which very little appears so far as I can find in the annals of medical literature. Dr. Hodgkin, of London, appears to have been the first to notice and describe it in a paper read before the Medical and Chirurgical Society of London, in January, 1832, and published in vol. xvii. of its Transactions. Dr. Samuel Wilks has given in *Guy's Hospital Reports*, Third Series, vol. xi., 1865, a most elaborate account of this disease, and which, as far as I can learn, embraces all that is known

concerning it up to the present time. In fact, according to Dr. Wilks, this disease is likely to be confounded with lardaceous disease, but he thinks it entirely distinct. It, he says, may have a likeness on the one hand to tubercle, and on the other to cancer, but yet is as much a disease "*sui generis*" as any other, and deserves a separate description of its own. Dr. Hodgkin reported six cases. Dr. Wilks reduces them to four—one being doubtful and the other a syphilitic affection. Dr. Hodgkin described the disease as characterized by enormous enlargements of the lymphatic glands throughout the body, with a peculiar white deposit in the spleen. Sometimes in the liver and other viscera spots were seen pervading its substance.

Dr. Hodgkin considers that so far as can be ascertained, this enlargement of the glands appears as a primitive affection of these bodies, and there is no reason to suppose it is due to inflammation or scrofula, nor indeed attributable to the formation of any adventitious structure. It appears in all cases to consist of a pretty uniform texture throughout, and thus to be the consequence of a general increase of every part of the gland, rather than of a new structure developed in it. In connection with this affection of the absorbent glands is the state of the spleen, which is thickly pervaded by defined bodies. We might suppose that the bodies in the spleen like the enlarged glands, were due to an enlargement of a pre-existing structure, etc. etc. Dr. Wilks in his paper brings forward a number of cases which have come under his own observation.

In my own personal experience I have met with two other cases besides the one above described, one especially of which appeared to answer to the symptoms of this disease. The first of these two, and the most doubtful, occurred while I was serving as one of the Resident Physicians to the Philadelphia Hospital, Blockley, the notes of which were kindly furnished me by Drs. Wm. H. Ford, John S. Parry, and Charles E. Smith, at the same time Resident Physicians in that Institution.

A Prussian, aged sixty-four years, had latterly been serving in the U. S. Army, in active service in the South. The lymphatic glands of the right side of the neck were much enlarged. They softened, and were opened before death, discharging a cheesy matter, with pus. Pleurisy set up, and the man died in about ten weeks from his admission, apparently from exhaustion. Cervical and bronchial glands only found involved; clavicle necrosed at its sternal attachment of the left side. There was much effusion in the chest; no syphilitic marks; and all the other organs were reported normal.

The other case was a mulatto boy, aged sixteen years; had followed the army for some time as an officer's servant. The gentleman with whom he lived consulted me in reference to his condition. I found the cervical glands of the right side very much enlarged, hard, and unyielding. There was also some enlargement of those of the left side; also of those in the axillæ and groins, and those of the mesentery; the spleen and liver were apparently normal. This boy was evidently suffering from tuberculosis of the lungs in an advanced stage.

Shortly afterwards he passed from under my care, was sent to a hospital, and, as I learned, in a short time died. I heard no result of the post-mortem, if any was made; but I have but little doubt that this case approached closely the disease under consideration, combined with general tuberculosis; for many of the cases have been combined with tubercle in one or more organs.

Perhaps of all symptoms in connection with this trouble, that of tubercle is the most common, yet not sufficiently so to typify the disease; so lardaceous disease often accompanies it, yet is oftener absent altogether. There is one striking feature in relation to this affection, viz: I believe all of the reported cases have occurred in males, and it is not confined to any age. If we place it in the order of malignant diseases, we have the tender age of many of the patients tending against such a position. It strikes us as more the result of something specific having entered the economy, as rather an accidental or acquired than an hereditary disease—as approaching nearer the syphilitic range of diseases rather than the truly malignant. In some of the reported cases new tissue seemed to have been developed in the glands; in others there was apparently a mere hypertrophy of the normal structure.

It is not necessary to consider it as an effect of change in the lymph, or of any other metamorphosis of tissue; but it appears rather to be a cause of trouble in relation to these functions. It has apparently not the tendency to death of the malignant diseases; but according to our idea, causes death by mere mechanical action as it were; causing effusion of serum in the great cavities by the bulk and weight of the enlarged glands, as a result of which the patients are gradually worn out and exhausted. This is the serious trouble, otherwise the tendency to death does not appear to be at all rapid, thus certainly taking it from the range of malignant diseases. Perhaps the most constant lesion, next to that of the lymphatic glands, is the enlarged spleen and its peculiar waxy spots; but as the spleen is most probably very closely connected with the lymphatics, these spots, as suggested, may be merely hypertrophied spots of the lymphatic gland tissue, and hence the constant lesion. I believe in no case has there been reported any inflammation of the lymphatic vessels, either afferent or efferent, or really of the glands, except around foreign spots—as tubercle; hence the enlargement is not a result of inflammation of the vessels (lymphangitis), or of the glands (lymphadenitis).

We rather incline to the idea that this disease is most likely connected with those diseases coming under the action of a malarious influence, the result of the specific malarious poison, if we may call it such. Not that it is developed in every case of malarious disease, yet there is that tendency, whether by the circulation being blocked by some of the pigments lately discovered, or by others undiscovered, it is impossible to say. This fact has struck us forcibly from one or two cases of enlarged spleen we have seen as a result of intermittent fever. Here were the general anæmic symptoms

and a tendency to enlargement of the whole lymphatic system. There may be some cases where this is not at all marked, but we have lately seen two where it was looked for and found. Now, taking these and other facts into consideration, it appears not impossible that this peculiar state, as described by Hodgkin, and referred by Wilks rather to the order of malignant diseases, may be nothing more nor less than a peculiar abnormal enlargement of the lymphatic glands following malarious poison, occurring once only in thousands of cases, perhaps under peculiar unknown influences, and producing dropsy, debility, and death, merely by mechanical pressure and not by their own inherent malignancy. It may be argued that if these enlarged glands are the result of malarious poison the tendency should be to return to health on removing the cause, but we have only to refer to some cases of the spleen enlarging from like causes, which will not recede, and cause death almost in the same way.

As may be inferred from the foregoing statements, the prognosis of the disease is as yet as unfavourable as possible. The diagnosis is not difficult. A general progressive enlargement of the lymphatic glands. Generally, extension of percussion, dulness over the spleen. The mesenteric glands generally enlarged, together with a history of the case, and a knowledge that the patient had been in his life exposed to malaria, and especially if he had not had prompt and efficient treatment. In syphilis we would have the history of the case, chancre cicatrices, &c., the glands comparatively small and firm, and the suboccipital chain especially available. True scrofula is, perhaps, much more concentrated to localities, as the neck, especially; yet it is well to remember that these diseases are often associated, and again that every case of enlarged glands is not either scrofula or syphilis.

In treatment, if we accept its malarious origin as true, of course, we must depend, first, upon the preparations of bark, then iron, iodine, and perhaps cod-liver oil. I say perhaps cod-liver oil, for perchance it will not agree with the patient, as here fats generally do not appear to be well assimilated, probably from the general disarrangement of the lacteal and the abdominal lymphatics generally. The diet should be in every way nutritious and easily assimilated. If the patient could afford it, perhaps removal to pure mountain or sea-side air would be of great benefit, especially if his residence be subject to the least suspicion of malarious influence.

Thus, then, we have attempted to give a somewhat crude view of "Hodgkin's disease," or, as we think it might well be called, "progressive enlargement of the lymphatic glands." So far as we can ascertain, this is the first notice the disease has received in this country, and we indulge in the hope that it may be soon more generally and thoroughly investigated, and placed among the list of well-known though, perhaps, rare diseases.

ART. X.—*Report of Surgical Cases. I. Diffused Traumatic Aneurism of the Femoral Artery. II. Circumscribed Traumatic Aneurism of the Occipital.* By R. B. MAURY, M. D., Memphis, Tenn.

CASE I.—Henry R., a healthy mulatto, twenty-one years of age, living in Port Gibson, Miss., was wounded in the lower part of the right thigh, by a conical ball from a Colt's pistol, on the 20th March, 1867. After walking a hundred yards he fell from loss of blood, and from this point was carried a short distance to the office of a physician, where he fainted, and the hemorrhage ceased.

The next day a circumscribed swelling was observed by the patient in the line of the wound; this gradually increased until the 1st of May, when he applied to me for relief.

At this time his case presented the following points of importance: An immense swelling involved the right thigh, about two-thirds of its extent, stretching from the knee to within a hand's breadth of the pubis, and confined chiefly to the anterior and adductor regions of the limb. This swelling was very hard, and presented indistinct fluctuation about the middle and on the inner aspect of the thigh; a distinct impulse accompanied by thrill was communicated to the hand when placed over the course of the main artery. Both orifices of the wound had healed very soon after it was received, and the line of the ball was found, by exact measurement, to be the line of the junction of the middle and lower thirds of the thigh; entering in front, it had passed to the inside of and very close to the femur. Over its course there was heard a distinct bruit, which was limited to a space of four inches vertical and five inches transverse measurement.

Pressure over the femoral, under Poupart's ligament, caused the bruit and the pulsation to disappear. Pressure below the origin of the profunda, at lower part of Scarpa's space, produced the same effect. The swelling encroached so much upon the popliteal space, that it could not be ascertained whether the artery pulsated there or not; but no pulsation could be felt in the posterior tibial or the dorsalis pedis. The leg and foot were swollen, and the patient complained of a feeling of numbness in them; he also complained of great pain in the knee and thigh.

Though the nature of the case was now clear, in order to remove all possibility of doubt it was thought proper to explore the tumour. For this purpose an incision was made to the deep fascia, on the posterior surface of the thigh, near the orifice of exit of the ball; through this a small trocar and cannula were introduced, by means of which the swelling was satisfactorily explored, and found to contain dark and clotted blood only; the fascia which bulged into the incision was deeply stained.

Being now convinced that the patient had received a wound of the femoral artery, I determined to search for, and apply a ligature above and below it. It was evident from the course of the ball that the wound must be in that part of the artery which lies beneath the tendinous arch of the adductors.

The patient's condition at this time was quite good; there was some constitutional disturbance, the pulse being 100, and he had lost flesh decidedly during his confinement; but he was a man of good habits, and entirely free from organic disease.

On the 9th May, fifty days after the receipt of his injury, I proceeded to operate, with the assistance of Drs. Wharton, Thomas, and Martin, of

Port Gibson. Chloroform having been administered and the tourniquet applied, an incision six inches in length was made in the line of direction of the vessels through the superficial tissues. The fascia lata being exposed, was opened upon a director along the external margin of the sartorius; this muscle being loosened in its sheath, was drawn well downwards, and the posterior layer of its sheath then opened along its middle the entire length of the superficial incision.

The cavity of the aneurism was soon reached, and a very large quantity of clotted blood was turned out from the inner and posterior parts of the limb. The vessels having been found, the saphena nerve was recognized lying upon their sheath, and upon the inner aspect of the artery there was seen an elliptical wound one-third of an inch in length, through which the blood flowed freely on slackening the tourniquet; this wound in the artery was clean, and presented smooth and rounded edges. A ligature was then applied to the artery on the proximal side of the wound, one-third of an inch above it. In the application of the distal ligature, some embarrassment was experienced from the presence of a large vein, which lay immediately upon the artery in close connection with it, and forked just where the ligature was to be applied. During the delay incident to this circumstance, bright arterial blood started freely from the wound in the artery, showing that the collateral circulation was already established. No other vessels requiring a ligature, the incision was closed, and the limb, elevated and flexed, was wrapped in cotton batting.

At the close of the third day after the operation, a small quantity of bloody water oozed up in the wound; it was of dark brown colour, very thin, and offensive; this was repeated several times, and seemed to be a mixture of pus and blood; it was never considerable in quantity, and pressure upon the artery in the groin did not seem to influence it.

The patient's general condition continued good until the 18th May; the pulse was about 100; the appetite fair; the circulation in the leg and foot perfectly satisfactory. No pulsation could be felt in the arteries of the leg, but the temperature was good and the capillary circulation undisturbed. The incision had healed except at two points, through which pus was discharged. During the twenty-four hours subsequent to this date, high fever was established and the limb became much swollen. On the 19th a counter opening for the evacuation of pus was to have been made on the inner side of the thigh; but at 3 o'clock in the morning profuse hemorrhage burst forth from the wound while the patient was asleep, and, though a tourniquet was at hand and a nurse was sitting by prepared to apply it, more than a pint of blood was lost before this could be accomplished. The hemorrhage having been controlled, the tourniquet was removed and pressure kept up over the artery by the finger until daylight.

The closure of the incision made in the operation for ligature, the extended accumulation of pus in the limb, and the uncertainty in regard to the exact cause and source of the hemorrhage (both ligatures being still fast), discouraged any hope that might otherwise have been entertained of remedying the trouble by reopening the wound and applying another ligature. To make effectual compression without serious risk of gangrene was thought to be impossible, and amputation was considered the only course compatible with safety of life to the patient. The limb was therefore amputated the same morning, by the circular method, at the seat of ligature. Six ligatures were required on the stump; the femoral artery, which had been cut just above the proximal ligature, was found to be firmly closed by a clot, and though it seemed very secure, a ligature was put on

it also. In the adductor region a pouch, which had been filled with coagula and afterwards with pus, extended five inches upwards in the stump towards the pubis; this was lined by a thick membrane. An examination of the limb showed that, in amputating, the artery had been divided exactly one line above the proximal ligature, and its condition here and in the stump illustrated well the three elements concerned in the process of closure, viz., external inflammation agglutinating the vessel and the adjacent tissues, an internal fibrinous coagulum, and firm adhesion of this to the collapsed walls of the artery. The proximal ligature was still inclosed by coagulated lymph.

The artery was now slit up with scissors between the two ligatures, and for a distance of three inches below; the ligatures were found to be an inch and three lines apart. At the seat of the distal ligature the artery had been divided through about one-third of its circumference; the remainder was still entire, and the ligature, though loose, was not detached. The line of division presented a clean, smooth cut, devoid of undue ulceration and all unhealthy appearance; this had been the seat of the hemorrhage. A coagulum was imbedded in the surrounding tissue which bordered upon the track of the ligature. Below the ligature (one-tenth of an inch by exact measurement), on the posterior wall of the artery, there appeared the open mouth of the first muscular branch of the popliteal; it was a large branch admitting readily an ordinary sized silver probe, and being traced for two inches, was found to run almost horizontally backwards and outwards. External to this and nearly on a line with it was the mouth of a smaller branch which admitted a large sized sewing needle No. 2. The main artery was healthy up to the very line of its division by the ligature, was free from stain or any appearance of a coagulum having ever been formed there, and so were the branches just described. All traces of adhesive inflammation at the seat of ligature, if any ever existed, had been washed away.

No cause could be discovered for the failure of the distal ligature to close the artery, except the proximity of this large muscular branch, through which the collateral circulation was brought in part into the main channel. The precise value of this as a disturbing cause is a subject upon which surgical knowledge at the present time is deficient. That it may and does prevent the formation of an internal coagulum is certain; but that it can prevent the deposition of adhesive lymph within the point of ligature, a process by which alone (with the exception of outside inflammation) arteries are sometimes closed, is, I think, not so susceptible of demonstration.

After amputation this case did well; convalescence was uninterrupted and complete, and the man soon returned to his occupation of shoemaker.

CASE II.—On the 18th November, 1866, Mr. A. S., a planter, fifty-five years of age, received a stab on the back of the neck, near the occiput. Free hemorrhage ensued. When his family physician arrived, this had ceased, and the wound, which had been made by a common pocket-knife, was closed by adhesive plaster. A small tumour formed at the seat of the wound, the importance of which was not recognized by the patient until the twelfth day, when it ruptured and hemorrhage to syncope occurred. His physician being called immediately, the wound was filled with lint saturated with the muriated tincture of iron, and a bandage applied. In a few days this dressing came away, and hemorrhage again followed. A consultation of physicians in his neighbourhood was then called, and the same treatment adopted with the same results.

On the 19th December I was sent for to see the case. Several consultations had been held, but no measures had been taken to prevent return of hemorrhage but compression. The patient had suffered four very large hemorrhages; twice he had bled to syncope, and his condition now was exceedingly critical; he was too feeble to sit up even in bed, and his wound presented an ugly and very unhealthy appearance.

The knife had entered at the posterior margin of the left sterno-mastoid, and passed obliquely forward beneath that muscle, wounding the occipital artery in a rather inaccessible position; confined pus had burrowed beneath the sterno-mastoid; the cavity of the false aneurism was filled with coagula and small sloughs. These were removed while the patient was under chloroform, and the wound was carefully examined, but the artery could not be induced to bleed, and the source of the hemorrhage was not discovered.

As already shown, the man's condition at this time was exceedingly unfavourable for the performance of any operation, and not being satisfied with the manner in which compression had been made or with the styptic used, I applied a graduated compress saturated with the liquor ferri persulphatis, with the faint hope that further hemorrhage might be prevented, or at least postponed, until the patient could be so stimulated and strengthened as to be better able to stand an operation. This dressing remained three days, and when it came away a profuse hemorrhage followed, in which he again fainted.

Being called again to the case, which was sixteen miles distant, I found him much more feeble than at my first visit. The pulse was scarcely perceptible, his voice could not be raised above a whisper, and any prolonged search for the bleeding point which might involve further loss of blood was clearly out of the question. Indeed he was reduced so low that it seemed almost useless to undertake any operation for his relief, and I hesitated about the propriety of administering chloroform. On the other hand, it seemed certain that the only chance for life lay in the application of a ligature to the artery. Chloroform having been again administered and the wound cleared, the cavity was found to be so deep as to necessitate enlargement of the wound in the direction of the course of the artery, and division to a considerable extent of the fibres of the sterno-mastoid. Hemorrhage now came from the bottom of this wound, proceeding from a soft, pulpy mass of disorganized tissue; the bleeding vessel was twice picked up with the artery forceps, and a ligature as often thrown around it, but each time the thread cut through and would not hold. Pressure over the carotid did not control the bleeding, and so much blood had already been lost during these fruitless attempts to find sound tissue that it seemed almost certain the patient would not survive the operation. The face was livid, the pulse imperceptible at the wrist, and the surface covered with a cold sweat. Further attempts to tie the artery were therefore discontinued, the wound was again plugged with lint steeped in the persulphate of iron, and the graduated compress reapplied.

All efforts were then directed to bringing about reaction. For several hours it was doubtful if he would revive; he did so, however, and had no return of hemorrhage, and, though his convalescence was very slow, he made eventually a perfect recovery.

This case affords another illustration of the value of styptics and compression in the treatment of arterial hemorrhage. The same means would probably have been successful in the early treatment of the case, if the styptic had been brought into immediate contact with the bleeding point.

ART. XI.—*Compound Fracture of the Sacrum, followed by Discharge of Urine through the Wound: Recovery.* Reported by H. D. BURLINGHAM, A. M., M. D., late Passed Assistant Surgeon U. S. Navy, now of Galesburg, Ill.

ABOUT 5 o'clock A. M., on a rainy and cold morning, September 20, 1866, I was called to see G. W., American, railroad conductor, æt. 25, robust, and of good habits. He was lying upon his left side, before the stove, in the position he had been left a few minutes before, unable to move, except his upper extremities. His surface was pallid and cold; countenance anxious; pulse feeble, and symptoms generally those of great shock to the system.

I learned that sixteen miles up the road his train had parted, and that in running back to pick up the after portion of it (he being upon the roof of a car), there was a collision in consequence of the detached cars having followed with considerable velocity on a down grade. The concussion threw him into the air, and in falling, his back struck the car, whence he bounded off down an embankment more than eighty feet. Arrived at the bottom, he began to scramble up, at first feeling but little injured. When half way up he began to experience great pain and difficulty in walking, and had a sensation as though warm blood was streaming down his legs. He was there found and carried to a car. Whiskey was administered, as they recognized the meaning of his pale face and collapsed condition. Blood was flowing from his back, but not in an alarming amount. On examination, I found a bruised, gaping wound, three and a half or four inches long, situated over the right lateral portion of the sacrum, three-fourths of an inch from a line corresponding to the spinous processes and extending down to about the base of the coccyx. Using my finger as a probe, I found the soft parts detached in various directions, and toward the right ischium the finger failed to reach the bottom of the wound. The portion of the sacrum uncovered gave signs of comminuted fracture upon the surface, but not satisfactory evidences that the whole thickness of bone was involved. The coccyx was not fractured. There were not discovered any considerable injuries elsewhere. The examination caused no pain.

I gave an unfavourable prognosis to his friends, and immediately began efforts to rally him from the shock. I urged him to make the attempt to urinate as soon as he had rested a little. At present, he had no desire, and thought he had emptied his bladder about 12 o'clock that night. Percussion over the bladder did not reveal distension. During the day reaction was scarcely perceptible. On leaving him at 10 o'clock P. M., he had not urinated, nor was the bladder distended. I directed that if he should have difficulty in passing water, when he desired to do so, they should send for me immediately, which they did a little after midnight. I endeavoured to pass a catheter, but found the neck of the bladder barred by a most rigid contraction, which was particularly manifest to the finger upon the perineum. After patiently and carefully endeavouring, for two hours, to insinuate catheters of different sizes and kinds into the bladder, I abandoned it for a little time, to await the effect of a liberal dose of morphia. Meantime a most urgent call came for me to go a few miles into the country. I therefore asked Dr. E. L. Phillips to take

charge of my patient, while I went to the country. I returned about 8 o'clock A. M., and was delighted to find that Dr. P. had succeeded a short time before in introducing a catheter. He had not been able to do it however until his patience and hope of success were well nigh exhausted; and then only with a very small (No. 2 or 3) gum-elastic conical catheter. There had flowed out eight to ten ounces of urine highly coloured with blood. Up to this time the patient had manifested great fortitude, but now began to be rather melancholy and restless, and showed a tendency toward delirium. Means were adopted to remove all possible sources of irritation. He complained of no pain. Stimulants were cautiously administered. In about twelve hours the catheter was again introduced, but under nearly as great difficulties as before. The contraction of the sphincter vesicæ was tetanic in force. There did not seem to be any torn places in the mucous membrane. Ether was given, but not up to the point of complete anæsthesia. Urine about the same in quantity and quality. General condition of patient but little changed.

On the 22d the catheter was passed with slightly less difficulty. The patient now expressed a desire to see his old army surgeon, Dr. Hance, of Aurora, Ill. The doctor came down the same evening, and, after a careful survey of the case, gave no sort of hope that he could recover, but added, "that if it was possible for *any one* to survive such a condition, this man may, for I have often observed his wonderful powers of endurance while in the army." There seemed to be a little reactionary effort now, and water-dressings were applied to the wound. He was delirious while asleep, and seemed to be troubled about his train.

During the night of the 23d he declared that urine was passing through his back, but the attendants could hardly believe it true, although they discovered the smell of urine upon the cloths.

At my next visit, other physicians being present, I asked him to contract the bladder, while we stood behind him, and immediately there issued quite a stream of urine from the lower angle of the wound. The catheter was now tried again, and a No. 8 or 10 gum catheter entered the bladder almost without obstruction. From this time forward there was never any difficulty in passing a large instrument. An attempt was now made to drain the bladder by keeping a catheter in it, and thus prevent the urine from passing through the wound. Almost every conceivable position was resorted to with this view, but for several days without success. The water would keep welling from his back as well as dribbling from the catheter. The patient was delirious much of the time; nor could he be persuaded to take nourishment in any sufficient amount. The pulse grew feeble; the edges of the wound rolled outward and began to slough; the neighbouring parts began to be excoriated, and bed-sores seemed imminent.

His condition was getting rather the worse for the next two weeks, when, one day, he was placed well over upon his right side (a position he had been in before), and to our agreeable surprise urine flowed through the catheter kept in the bladder, without any escape of it through the back. Here, for the first time, was a little glimmer of hope, and the first indication of the locality of the opening into the bladder.

I inferred that the new outlet was at the neck, and upon the left side. The delirium seemed to be abating, and his bed was prepared with reference to keeping him constantly upon the right side. Scales and fragments of the surface of the sacrum were beginning to exfoliate. A probe could be passed from about an inch above the base of the coccyx, and about three-

quarters of an inch to the right of the median line, across the pelvis, forward and slightly downward, a distance of five inches, until it was obstructed by bone, denuded or fractured. The point thus reached was, of course, quite a distance to the right, and behind the neck of the bladder. This was the track by which the urine found its way to the surface, and seemed very narrow, as the probe could be moved only slightly from side to side.

From this time onward the urine was kept from flowing through the wound (except when his position was changed, or he strained in defecation), by keeping a catheter constantly in the bladder. The instrument was removed once or twice a day for the purpose of cleansing, or to introduce a new one. The urethral irritation became considerable in a short time, but *then* did not appear to get worse. Ether was administered when the instrument was introduced. After the first few days the appearance of blood in the urine ceased. There was a great abundance of mucus, and at times *an astonishing amount* of pus. For the most part, the reaction of the urine was strongly alkaline, ammoniacal in its character.

There were not, at any time, evidences of effusion into the peritoneal sac, or of infiltration into the connective tissue. On two or three occasions, the phosphates were thrown down so abundantly in the urine, that the catheter had to be removed every few hours on account of the incrustation. This condition readily yielded to hard cider and benzoic acid. Bed-sores had formed in some places, but by the end of the fourth week he was taking more nourishment, and his general symptoms were less threatening. His bowels were kept in tolerable condition by an occasional mild cathartic, and by water injections. He now suffered much pain, but not such as is produced by lesion of special nerves. Morphia acted charmingly, and soon became indispensable. Pus was discharging freely from the wound, and healthy granulations began to appear.

The patient had complained of soreness about his shoulders almost from the first. The right one gradually got well, but during the fifth week the left one began to swell rapidly, and grow very painful. In a short time pus was detected, and an opening being made over the deltoid muscle, which gave exit to several ounces of very fetid pus. The amount of pus now discharged daily from the wound, the bladder, and from this abscess was almost incredible. Nutrition and stimulants were urged. He tolerated milk better than anything else. In spite of bandaging, strapping, and compression, the abscess followed down the muscles of the arm, and had to be opened in several places. After two or three weeks more, abscesses began to form about the left great trochanter, in the same manner as about the shoulders. Their history and progress were about the same. It seemed a little strange that these abscesses should have formed on the left side, rather than upon the right, which received the constant pressure of the weight of the body. They continued to discharge for a few weeks enormously, and then gradually subsided. The ulcers from the bed-sores also filled up with sound granulations. By the first of February, 1867, but little pus was seen except as it came through the catheter. I had at different times left the catheter out for a while, in order to learn the condition of the opening into the bladder, but invariably in the course of two hours or less, the urine would begin to flow through the back, and of course cause much mental depression to the patient. I could see, however, that the sinus was contracting, and I hoped that in some way nature would ultimately suc-

ceed in closing the false opening in the bladder. His appetite became good, and he slowly gained flesh and strength.

On the 6th day of May, nearly seven months from the time of the injury I left the catheter out for a few hours, and was delighted to find that the water did not flow through the wound, after a successful attempt to evacuate the bladder naturally. He had control of the sphincter and other muscles of the bladder. Since that time the catheter has not been introduced, but on a few occasions urine has passed through the sinus. The irritation of the urethra gradually passed off. Pus and mucus continued to be discharged for a long time. Occasionally a scale of bone or portion of dead tissue obtained exit from the wound.

In August last the patient was taken to Missouri, after he had gained considerable strength, and was riding out nearly every day, and could get about the house with the aid of crutches. His right leg had become considerably contracted from the cicatrix of a bed-sore over the great trochanter, and from the position we were obliged to keep him in so long. During the summer he gained considerably, but occasionally suffered from the formation of pus, which discharged itself mostly from the old wound. I believe there has been no escape of urine for several months. At the present time (Feb. 15, 1868) he is convalescing from one of those repeated prostrations which every time threaten his life.

This case has excited much interest amongst the profession in this vicinity. The questions which give rise to most speculation, are: How was the opening in the bladder produced? Where was the point of opening? When did it happen? By what route did the urine find exit? Why was there not infiltration into the connective tissue, or effusion into some cavity? Is it probable that the sinus leading to the bladder will ever be entirely occluded? How could there be such an amount of violence upon the sacrum, with comminuted fracture, and so little injury to the sacral nerves? The readers of the Journal will remember a paper by Dr. Lidell in the April No. for 1867, on the Rupture of the Abdominal and Pelvic Viscera, but amongst the cases cited I find no parallel to this. Nor have I found, thus far, any record of such a case. My opinion in regard to the above questions gradually took form as I watched the progress of the case. I believe the wound was produced by the immediate effects of the injury, but that the urine did not pass out at first in consequence of a tonic spasm at the neck of the bladder, from the irritation.

It seemed demonstrated that the locality of the rupture was at the neck, and upon the *left* side. In regard to the route of exit, and why infiltration did not occur, I have no definite idea. How nature could form a water-tight, narrow tube, in that locality, of such length, and in so short a time, is a puzzling problem.

There were many very interesting phases of the case during its progress, but the details would occupy too much space.

TRANSACTIONS OF SOCIETIES.

ART. XII.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1867. Sept. 26. *Cancer of the Liver*.—Dr. WM. PEPPER, in presenting the specimen, gave the following history of the case from which it was derived:—

B. T., æt. 50, Irish, domestic, married and has seven children, four of whom are now living, was admitted to Blockley Hospital July 29, 1867. So far as could be learned, she belonged to a healthy family. She first noticed a tumour below the right ribs about eight months ago, since when it has grown steadily. On admission, the following symptoms were noted: Extreme emaciation; mammæ atrophied; skin pale, but without the slightest tinge of jaundice; œdema of left hand, and of both legs up to the knees. The chest walls were very thin and resonant throughout, and the respiratory murmur pure; cardiac sounds normal. There was a large nodulated mass extending across the entire upper portion of the abdomen, the lower border being easily traced from two inches above the crest of the right ilium, across to a point midway between umbilicus and pubis, then upwards to about an inch and a half above and an inch to the left of the umbilicus, and thence to the left hypochondriac region in a line about three inches below the margin of the left ribs. This mass, evidently the liver, presented the chief enlargement in its right lobe, the lower border of which was rounded and very hard, and, on passing the hand beneath it, several large hard nodules could be felt attached to the under surface. There was also a large rounded mass springing from upper surface of left lobe. Hepatic dulness, in the line of the nipple, began on the sixth rib, and extended downwards nine inches. Width of right lobe, measured over the most prominent part, eleven and a half inches. The most projecting nodulated part occupied a position above and to the right of the umbilicus, and measured eighteen inches around the base; the skin over this was tense and glistening, but neither adherent nor discoloured. The whole mass pulsated visibly, but there was no murmur audible over it; it was also exceedingly hard, inelastic, and but slightly sensitive. Veins of the abdominal walls, especially the right superficial epigastric, much enlarged; the latter tortuous, and apparently transmitted but little blood, and that in an upward direction. External mammary veins distended, their current strongly upwards, and apparently they formed an anastomosis with the epigastrics. No evidence of peritoneal effusion.

31st. The position of the liver appears to vary with degree of distension of the abdomen, since the lower edge of the right lobe is within half an inch of the crest of the ilium; indeed, the whole liver is somewhat rotated upwards and to the right, and can be moved by firm pressure. Urine discharged involuntarily; bowels quiet. Marked puffiness of the eyelids gradually appeared, with decided chemosis; pupils moderately contracted.

Oct. 2. Has been lying for several days in a drowsy state, from which it is very difficult to rouse her; position is constantly on the left side, half turned over on to the face. Œdema and chemosis much increased, most marked on the left side. Has had one thin and rather light-coloured stool. Pulse 108. Temperature in left axilla 100.8° . Towards evening, temperature 101° ; the œdema of the dependent side of the neck had so increased as to interfere with deglutition and respiration, and death occurred the following morning at eight o'clock.

Post-mortem.—Body much emaciated; the surface pallid, without the least jaundiced tinge.

Brain healthy; no disease of vessels at the base, and no cause of pressure upon the ophthalmic veins.

Thorax.—Upper costal cartilages ossified; lungs anæmic and slightly œdematous in parts, otherwise entirely healthy. Each pleural cavity contained about f3ij serum. *Heart* rather small; contained a considerable amount of soft dark clots; some thickening of the edges of the mitral valves, and at the seat of the corpus aurantii on one leaflet of the aortic valve a small calcareous nodule.

Abdomen.—A small amount of peritoneal effusion, with several shreddy masses of dark-reddish lymph, lying free in the cavity; the peritoneum itself smooth and apparently healthy. Spleen of normal size, rather pale and soft. Kidneys highly fatty; right smaller than left, and in one place presented a patch of firm yellowish tissue, somewhat depressed below surface. *Stomach* presented no disease of its walls; the mucous membrane injected, of a slate colour. Small intestine quite healthy; mucous membrane of the duodenum congested and ecchymosed in spots. Large intestine contained a considerable amount of partially-formed, well-coloured feces; its walls healthy, excepting that the transverse colon was closely adherent to, and partly blended with, the mass growing in the anterior border of the liver. The mucous membrane at this place was ecchymosed, and in several spots so softened as to break down under the slightest pressure. The omentum small, shrivelled, and contracted; all the fat removed. *Liver* weighed 7 lbs. 15 oz. Posterior section apparently free from disease. Anterior part has two large masses, the larger seated in the right lobe, and measuring $5\frac{5}{8}$ inches in diameter. Antero-posterior diameter of this lobe measured 10 inches, the lateral 7 inches. The large rounded mass presents numerous whitish nodules, varying in size from that of a pea to that of a walnut, separated by narrow bands of dark liver-tissue and distended tortuous veins. The peritoneum over this part thickened and whitish. A section of this mass showed its structure to be quite dense and fibrous, especially in its central portion, while the periphery, to the extent of $1\frac{1}{2}$ inch in width, was of a delicate rose-pink colour, interspersed with spots of deep purplish red. It did not bleed on section, and scarcely broke down on pressure, only here and there showing signs of breaking down; a small quantity only of cancer-juice could be expressed. Posterior portion of this lobe contained but one nodule, $\frac{1}{3}$ inch in diameter. Large nodule in anterior border of the left lobe measured 3 inches in diameter, embracing the whole space between the layers of peritoneum, being merely surrounded by a layer of liver-structure one line in thickness. This mass could readily be enucleated from its seat, being merely attached to the surrounding liver-structure by a capsule of connective tissue. On section, presented a central portion of almost pure white colour, very firm and dense, surrounded by a rim of

tissue quite elastic, not easily breaking down under pressure, smooth on section, and of a grayish-white colour, variegated with spots of pinkish red. Peritoneum over this mass but slightly thickened, and had a few enlarged, congested veins. In the posterior part of this lobe was one small nodule, about one inch in diameter.

The true liver-structure appeared in a state of nutmeg congestion, and rather pale and flabby. These changes were not marked, and, when examined microscopically, the liver-cells were quite healthy, with merely a slight excess of fatty and granular contents. The impression given by the entire mass was that of enormous malignant growths arising in the anterior border of a comparatively healthy liver, not growing at the expense of the liver at all, but merely distending the structure over their increasing bulk. There were, in addition, several large cancerous masses in the fissure of the liver, one of them fully $1\frac{1}{2}$ inch in diameter, which seemed to be diseased glands. The common bile-duct was quite large, as was the hepatic duct also; but on tracing the cystic duct, the gall-bladder was collapsed, its walls greatly thickened, and closely adherent to an enlarged cancerous gland. The vena porta was perfectly healthy, and apparently had not been at all compressed.

Microscopic examination of the morbid growth showed the most typical appearances of encephaloid cancer.

The points of most interest illustrated by this case appeared to be the following:—

1. The entire absence of adhesions between the convexity of the liver and the diaphragm or abdominal wall, so that the position of the organ varied greatly with the varying distension of the abdomen, and could readily be altered by moderate pressure.

2. The strictly primary character of the disease of the liver, unless indeed it can be held to be consecutive to the cancerous growth in the glands in the fissure of the liver, no other organ of the body being affected.

3. The almost complete limitation of the cancerous growth to the anterior border, the remaining part of the liver being quite healthy, and able to perform its function, as shown by the entire absence of jaundice, and the well-coloured feces found in the colon after death.

4. Attention may be called to one or two peculiarities in the symptoms presented during life; to the extensive œdema of the extremities, combined with chemosis and œdema of the eyelids, without any ascertained local cause, and due probably to extreme anæmia; and, finally, to the temperature, as recorded both morning and evening. In a case of cancer of the liver reported to this Society by Dr. Da Costa, and published in the second volume of their proceedings, the temperature was unusually low, and allusion is made at the same place to several other cases of cancerous disease in which the same phenomenon of reduction of temperature had been observed. In the present case, however, the thermometric record— 100.8° in morning, and 101° in evening—shows that we cannot regard reduction of temperature as a diagnostic sign of cancerous disease, unless indeed we hold that the observation of the temperature for a single day only, and that day the last of life, does not furnish sufficiently reliable results to base any inferences whatever upon.

Oct. 10. Cancerous Tumour of the Eyeball, occurring in a Child of Eighteen Months.—Dr. John Ashhurst, Jr., said this case was under the care of Dr. C. J. MORTON, of Chester, Pa., who contributed the specimen, and furnished the following notes of the patient's history:—

Edgar S., born Jan. 1, 1864. When about eighteen months old, the pupil of the eye which was subsequently the seat of the tumour was observed to be widely dilated, being three or four times as large as that of the opposite side. Slight conjunctivitis followed, with marked intolerance of light. A convulsion, preceded by high fever, but leaving the child apparently as well as usual the day after, was the next phenomenon noted. Blindness of the affected eye soon followed, and from this time the progress of the case was from bad to worse. The eyeball was removed, at the earnest solicitation of the parents, and confessedly as a palliative mode of treatment merely, on March 31, 1867, by Dr. Thos. Geo. Morton, of Philadelphia. The disease returned, *in situ*, in about six weeks, and death, preceded by much suffering, ensued on June 30, 1867. The child's complexion, which was somewhat characteristic of the cancerous cachexia before the operation of March 31, became very markedly so after that time. The specimen shown to the Society was the secondary tumour, removed after death. Careful inquiry failed to detect any evidence of the disease being hereditary in the child's family.

Oct. 24. Osteo-Enchondroma of the Venter of the Right Scapula.—Dr. GEO. PEPPER gave the following history: This specimen was removed from the body of a coloured boy, aged 16 years, who died in the most extreme condition of emaciation from general tuberculosis. During life the right scapula was discovered to be rather more projecting than normal, but no particular symptoms were noticed in connection with it. The growth sprang from the under surface of the bone, close to the posterior border, and about midway between the upper and lower angles. The tumour had a flat mushroom-like appearance, with a broad sessile attachment and thick overhanging edges; it measured $1\frac{1}{2}$ inches in its greatest and about 1 inch in its lesser diameters, and was elevated about one inch above the surface of the bone which seemed of perfectly healthy character.

The growth consisted, for the most part, of a very dense bone over the surface of which was superimposed a thin layer of a pinkish, translucent, cartilaginous-like substance. On section, the pedicle appeared to be osseous in structure, while the expanded body was partly osseous and partly calcareous, overlaid as before stated by a thin layer of cartilage. The osseous structure was cancellous in character and of a reddish hue, while the calcified portion was of a dull white colour and very dense and hard. The marrow cavities, which were abundant and large, contained a reddish gelatinous material. When the bony structure was examined under the microscope the bone corpuscles were found to be small, and crowded, and the canaliculi indistinct. The calcareous matter showed amorphous, highly-refracting particles (apparently mineral salts), with no true osseous tissue. The reddish gelatinous material consisted of granular fat, free oil globules, blood-corpuscles, and irregularly rounded and oval granular nucleated cells. The pinkish translucent substance presented all the characteristic appearances of cartilage structure, except that the loculi were crowded and the nuclei shrivelled and grotesquely irregular.

Dilatation of Heart; with Tricuspid Regurgitation, and Fenestrated Condition of Aortic Valves.—Dr. WM. PEPPER read the following history:—Henry S., æt. 40, shoemaker, admitted to Philadelphia Hospital Sep-

tember 25, 1867. For the past twenty years has been very intemperate; but enjoyed good health until three months before admission, when he was attacked with severe cough and dyspnoea, following exposure. The cough disappeared in a few days, but the dyspnoea steadily increased, although he continued to work at his trade until two weeks before admission, when his legs became œdematous and dyspnoea was so extreme as to prevent him from lying down. He died within forty-eight hours after entering the ward. Physical examination showed the heart to be enlarged, and its action very feeble; there was also a systolic murmur to left of sternum, from fourth rib downwards, though not heard to left of apex beat. The lungs were intensely congested; and veins of neck distended and probably pulsating. There was marked lividity of face and neck.

Post-mortem.—*Liver* very large and heavy, and presenting the typical nutmegged appearances. *Spleen* somewhat enlarged, heavy, and dense: trabeculae unusually evident. *Kidneys* much congested, the cortical substance dotted with livid red spots: the cones in places were marked with livid streaks, in others with congested points. *Lungs* tightly adherent; deeply congested, but still floating in water. A dense puckered cicatrix at the right apex. Bronchial tubes unnaturally rigid and uniformly dilated. *Heart*: No pericardial adhesions; but little pericardial effusion. Two large white spots on the anterior face of the right ventricle; its cavity filled with chicken-fat clots, while the right auricle was distended with dark blackish clots. Right cavities of the heart enormously dilated; walls of right ventricle of almost normal thickness, and very hard and tough; walls of right auricle were, however, much thinned. Tricuspid valves thickened and presented several irregular fibroid nodules upon their surface: hydrostatic test showed them to allow marked regurgitation. The pulmonary artery dilated, rather exceeding the aorta in size: its walls were, however, healthy, and its valves competent and healthy. Left cavities of the heart contained less blood than the right, and the clots here were more dark and soft. The auricle and ventricle also less dilated, and the muscular structure of the ventricle less changed—being quite red and healthy looking. The mitral valves were slightly thickened, and were hydrostatically competent. The aortic valves very thin towards their insertion, the upper borders were markedly fenestrated, but were also competent.

Typhoid Fever; Death on Eleventh Day; Enlargement of Peyer's Patches without Ulceration; Vesicular Distension of Follicles throughout Intestines.—Dr. WM. PEPPER gave the following history:—

John B., æt. 17, German, admitted to Philadelphia Hospital August 6, 1867. Had been living for two years in Baltimore, and had suffered for nearly ten months with intermittent fever; legs and scrotum became œdematous six months before admission. Entered Baltimore Hospital in April, and remained under treatment there three months, being much relieved. In early part of April, suffered for several days, with almost complete suppression of urine. When seen in August, legs still œdematous, and surface of the body sallow. Bowels quite loose; urine albuminous. He was ordered sulphate of cinchonia in antiperiodic doses, and Basham's mixture; the œdema almost disappeared, and he gained strength rapidly. This improvement continued until September 18, when diarrhoea and vomiting set in, with marked fever; his pulse ranged from 96 to 106;

the expression of his face was dull and stupid, though he could be roused, and answered intelligently; the skin was hot, and there was marked hyperæsthesia of surface, but no eruption; the tongue dry and covered with sordes. On the 27th the right parotid gland became inflamed. He remained in this state until the 28th, when he began to sink, and died early in the morning of the 29th, at the beginning of the eleventh day of the disease.

Post-mortem.—Brain and spinal cord not examined. Heart small and flabby; its valves quite healthy. Spleen enormously enlarged and almost circular in outline, being 8 inches long and 7 wide; its tissue dark and very soft; capsule thickened and puckered in one place, and adherent to a fold of the intestine. Liver enlarged, of a pale slate colour, soft and pasty. Kidneys congested, and presented slight granular change. Intestines distended with flatus and fluid feces. The large intestine presented throughout its extent staining of the mucous membrane by its contents; and marked stellate injection, especially in the upper part. Follicles of the mucous membrane much enlarged and distended, so as to form little pearl-like prominences, acuminate, containing a drop of turbid thick serum, and when ruptured leaving little oval ulcers. This condition was most marked in ascending colon, where the mucous membrane was closely studded with these follicles, so that they imparted a mammellated feeling to the hand when passed over it. This enlargement extended up to the vermiform appendix, though not so marked in the head of the cæcum as below. The solitary glands throughout the small intestine were enlarged in the same way; the lesion being most marked in the ileum, diminishing in the jejunum, and again presenting itself in the duodenum. Peyer's glands were all enlarged, especially towards the ileo-cæcal valve, but none of them had as yet ulcerated; their surface was rough and irregular, presenting numerous curved and branching ridges. Mesenteric glands also enlarged.

Nov. 14. Encephaloid Cancer at the Bend of the Arm.—Dr. S. W. GROSS exhibited a well-marked specimen of the hæmatoid variety of encephaloid cancer at the bend of the arm, and read the following history of the case:—

Philip Messimer, a blacksmith, æt. 42 years, early in May, 1867, while shoeing the hind foot of a fractious mule, was injured by the animal suddenly jerking the leg away, thereby powerfully wrenching his right elbow. There was no external injury; but two weeks later, on waking in the morning, he found his elbow and forearm much swollen and painful, conditions which did not exist on the previous evening. These inflammatory symptoms were reduced by topical and general medication, and in one week he was enabled to resume his work. A tumour of small size, however, remained, and this gradually increased, until the 1st of September, when he was obliged to desist from work, on account of the size of the tumour, and the painful and swollen condition of the forearm. Two weeks later, a physician made a small opening into the swelling at its inner side; but nothing more than clotted blood is described to have come away.

On the 2d of November, Messimer came under the care of Professor S. D. Gross, at the Clinic of the Jefferson Medical College. He had lost flesh; his countenance was somewhat pallid and flabby; but, in other respects, his general condition was good, and there had never been any

cancerous disease in his family. The tumour was most marked along the inner aspect of the limb, and extended from five inches above to three inches below the elbow, but the motion of the joint was good, and only embarrassed by the presence of the morbid growth. The swelling was greatest at a point corresponding to the internal condyle, where it measured sixteen inches and a half in circumference, that at the corresponding point of the sound arm being eleven inches. The integuments over the growth were actively inflamed, and preternaturally hot, symptoms simulating an acute abscess; and there was also some pulsation, which was, however, referable to the displaced brachial artery. By an incautious observer, the tumour might, therefore, have been mistaken for an inflamed aneurismal sac. There was, however, no doubt as to the nature of the tumour, as it was characterized by bulk, rapidity of growth, a soft, semi-elastic consistence, a lobular feel, a deceptive sense of fluctuation, a dull, heavy pain, and enlargement of the subcutaneous veins. The forearm was somewhat œdematous, and the fingers were moist and cold.

The patient having been put under the influence of chloroform, an incision was made into the growth, with the effect of giving issue to characteristic encephaloid matter, and clotted blood. The diagnosis, having thus been verified, the limb was removed at the shoulder-joint, and at this date the man is nearly well, the wound having united almost throughout its entire extent.

An examination of the dissected limb discloses an ovoidal, and more or less lobulated tumour, the lower part of which is seated in the triangular space between the supinator radii longus and the pronator radii teres muscles, from which it is easily separable. Above, it extends along the inner side of the arm, and becomes lost in the triceps muscle, with which it is intimately connected. The pronator teres muscle is firmly stretched and displaced by the growth, and its anterior fibres have undergone fatty degeneration. The tendinous portion of the brachialis anticus muscle is secondarily involved, a section of it disclosing the hæmatoid variety of encephaloid. The cyst of the tumour is very distinct, being of a rosaceous hue, and having considerable firmness and thickness. Below, the tumour is well defined, and isolated from the original structures in front of the joint, from which it can easily be separated by the fingers carried around it. Above, the limits of the cyst are not so well marked, involving as it does the inner border of the triceps muscle, which is secondarily affected for five inches above the joint. The median nerve is stretched over the inner side of the growth, and the brachial artery is displaced outwards. Pressure upon the tumour is followed by the escape of pinkish cerebri-form material, and clots of blood. Several lymphatic glands along the course of the brachial vessels and nerves were secondarily involved.

In connection with the above specimen, Dr. Gross exhibited a coloured drawing of a similar tumour, occupying the upper limits of the forearm, the cyst of which was well defined. The patient was a gentleman, from Ohio, thirty-five years of age, who underwent amputation of the arm, at its middle, in August, 1865. For upwards of six years, his health remained good, when he died, as was supposed by Professor Lawson, of the Medical College in Ohio, of secondary medullary carcinoma of the lung. A post-mortem examination could not be obtained.

In August, 1867, Professor Gross also amputated at the shoulder-joint, for an encephaloid tumour involving the triceps muscle, from the olecranon process, to half-way up the arm. The patient was a gentleman, 65 years

of age, from the interior of the State. The tendon and the fleshy parts of the muscle were infiltrated with the disease, which probably began in the interfibrillar tissues, from which it gradually encroached on the fleshy fibres, which it displaced, altered, and finally destroyed. In none of these three cases were the bones involved.

Ovariectomy.—Dr. W. W. Keen read for Dr. W. L. ATLEE the following report of a successful case of ovariectomy:—

July 19, 1861. Miss M. G., of West Chester, Pa., aged 16, called upon me with a letter from Dr. W. D. Hartman. She has not menstruated since May, 1860, and dates the commencement of her disease at that time. She was tapped two weeks ago, and is now much larger than a woman at full period. All the characteristics of ovarian dropsy exist. There is a pretty uniform distension of the abdomen, which is occupied by one large cyst, containing a more solid mass in its anterior wall. Fluctuation is distinct. The solid portion of the tumour occupies a central position, extending from a point two inches above the umbilicus, nearly down to the pubes. Upon pressing this portion towards the spine, it carries the walls of the abdomen with it, indicating the existence of parietal adhesions. There is also a feeling of crepitus, resembling the crackling of new leather, over the whole anterior part of the tumour, upon manipulating the abdomen.

On examining per vaginam, the hymen is found to be absent; the uterus is pushed back, the cervix scarcely perceptible, and the os too small to admit the sound. Anterior to the uterus an elastic mass occupies the superior strait and dips down into the pelvis. This is evidently a portion of the abdominal cyst. The cicatrices of theappings are plainly visible on both sides, beyond the lineæ semilunares. She says that she has heretofore suffered severe pains in the region of the adhesions.

History.—Dr. W. D. Hartman, of West Chester, her physician, sent me the following history of the case after operation:—

“Some time in May, 1860, I was consulted by Mary G., aged 15 years, for an enlargement of the abdomen, which gave her no pain, but she was much troubled with sick stomach and headache. Menstruation had ceased several weeks before, and she attributed its cessation and her subsequent illness to having scrubbed house in her bare feet. She had not menstruated more than five or six times in her life. The periods were regular, but the amount secreted was always scanty, and of a pale colour. Colour florid; possessed of considerable *embonpoint*. Been convinced of the existence of abdominal dropsy; with a view to relieve it various diuretics, cathartics, and alteratives, singly and combined, were successively resorted to. Although the kidneys always responded freely to their action, the accumulation of fluid steadily progressed. This state continuing until December 22d, I was forced to resort to tapping to obtain temporary relief. Owing to a large tumour which had been observed for a long time occupying the region below the umbilicus, a point midway between the anterior-superior spinous process of the ilium and the umbilicus on the left side was chosen at which to make the puncture, and twenty pints of a thick chocolate-coloured fluid were evacuated. The vomiting, constipation, and suffering from pain and distension of the abdomen were immediately relieved, and she was about in a few days. Being now satisfied of the character of the disease, with a view to a last effort, compression of the abdomen, and painting it with the tincture of iodine, and the use of the liq. ferri iod. were tried for a time without any sensible effect. February 8, 1861, I was again compelled to resort to tapping, which was performed on the left side, and about twenty-three pints of fluid were evacuated, of the colour and consistence of thick flaxseed tea. For

some time previous to this operation she had been losing flesh. Medicine had long since been abandoned, and I now looked to occasional puncturing of the cyst as the only temporary relief from the rapidly accumulating fluid.

"On the 7th of April she was again tapped on the left side, when twenty-six pints of fluid were again evacuated, similar in appearance to the last. The tumour had increased to a considerable extent since the last tapping, and gave some trouble.

"She was again tapped May 18 and July 2, on the right side of the abdomen, the size of the tumour interfering with the usual point of puncture at each of these tapplings. The fluid measured twenty-nine and a half pints, and had the usual appearance. Previous to the tapping on the 18th of May, her hands, feet, and face were quite œdematous for the first time, but after she was punctured this soon disappeared, and never returned. The patient now began to lose flesh rapidly, and seemed as one doomed to sink from her malady before many months. Although the operation for the relief of her disease, with its attendant risks, had often been mentioned to her, she had always refused to consent to encounter them. After the last tapping, however, at my urgent solicitation she consented to consult Dr. W. L. Atlee, of Philadelphia, with a view to ascertain his opinion of the propriety of an operation, and the following is his reply to my note, containing a brief history of the case:—

"*Philad., July 19, 1861.* My Dear Doctor: I examined your patient, Miss G., to-day. You are correct in the opinion that this is a case of ovarian tumour. Of course, nothing but extirpation of the cyst will cure her; and if she is willing to encounter the risk of an operation, she is entitled to the chances of it. There are, however, adhesions between the walls of the cyst and the parietes of the abdomen. In anticipation of an operation I would immediately place her on the use of the tinct. ferri chlor. I would advise the extirpation of the mass before again tapping her. Should you prefer not to operate, I will visit West Chester out of charity to the poor girl, and do it with pleasure."

"Believing that her case was a more favourable one for the operation than usually presented, I encouraged her to submit to it, especially since she could obtain the experienced hand of Dr. Atlee for its performance. After consulting her friends, she assented, and Friday, August 2, was fixed by Dr. Atlee and myself for its performance.

"So rapid, however, had been the accumulation of fluid, that by July 26 I was forced to puncture the cyst for the sixth time, when about twenty pints of fluid were evacuated with difficulty, one-third of the fluid probably remaining. In a day or two she had regained her usual appetite and spirits. It is proper here to remark, that after the fluid had accumulated to a certain extent she would have severe abdominal pains, followed by sickness and vomiting of bilious matters. The pulse was feeble and frequent (135 to 140), with coldness and blueness of the lips and extremities. Upon puncturing the cyst, and evacuating its contents, these symptoms would subside at once."

Operation.—August 2, 1861, at 4 P. M. I met the following gentlemen at the house of the patient in West Chester: Drs. W. D. Hartman, Isaac Thomas, John R. Hoskins, Joshua R. Hayes, Jacob Price, John R. Everhart, Charles L. Seal, W. S. Malany, Samuel H. Harry, John B. Brinton, Daniel G. Brinton, and Messrs. W. B. Brinton, Arthur Ebbs, and W. Lemuel Atlee, medical students. The anæsthetic (two parts sulphuric ether, one part chloroform, liquid measure) having been administered, I made an incision five or six inches long in the linea alba below the umbilicus, penetrating through a thick wall of adipose tissue down into the peritoneal cavity. This exposed the more solid portion of the tumour. Passing my finger between it and the walls of the abdomen, I separated the adhesions in front. The solid mass was now pushed towards the left side as far as possible, to enable me to reach the cyst behind it with the trocar. This I perforated with a long, thick trocar, giving exit to several quarts of thick, tenacious, gelatinous, starch-like fluid, and

filled with heavy flakes of more solid matter. All the contents of the cyst could not be brought through the cannula, and the cannula itself was finally forced away. This was owing to the cyst being adherent deeply in the right side, and the solid tumour blocking up the incision in front of it, so that it was impossible to rotate the opening in the cyst opposite to the opening in the walls of the abdomen, even with the aid of the vulsellum. This was unfortunate, as it was found afterwards that in detaching the deep-seated adhesions, the remaining contents of the cyst, consisting of the above kind of fluid, flakes and purulent matter escaped into the cavity of the abdomen, and flooded the viscera. The adhesions were separated with difficulty, and were both omental and parietal. After separating them, the whole tumour was gradually drawn out of the abdomen, and was found to be attached to the left side of the uterus by a very wide, thick, vascular pedicle, with the Fallopian tube bordering its extreme left. After crowding the pedicle together the clamp was applied and the tumour secured, leaving a portion of the cyst wall behind as a button to the clamp. The abdominal cavity was now seen, filled with the contents of the cyst, and it required a long time to cleanse it out, particularly the deep cavity of the pelvis, in which also were several clots of blood. This was carefully accomplished with soft sponges. After inspecting the torn vessels at the several points of adhesion, and finding none requiring the ligature, the wound was closed with five interrupted sutures, and dressed as usual.

The viscera generally looked pretty healthy; the intestinal capillaries, however, were engorged. The uterus was small, but healthy; and the other ovary sound. The anæsthetic agent acted admirably; there was not the slightest disturbance of the stomach or diaphragm, and the intestines were perfectly quiet. The patient's lips continued rosy all the time. The pulse did not flag, and was really fuller after than before the operation.

The fluid, when boiled, turned white and thickened, without having its fluidity destroyed. It was covered with a thick scum, and had small white coagula through it.

The tumour consisted of the left ovary. There was one large primary cyst, with a polycystic mass in its anterior wall, weighing altogether 32 pounds—cyst $2\frac{1}{2}$, and fluid $29\frac{1}{2}$ pounds.

August 3, 1 P. M. Dr. Hartman writes:—

"I have just seen our patient; she had some pain in her left groin and back last evening, but rested well after one or two doses of the anodyne. She is cheerful and *hopeful*. Her pulse 100, full and soft; and for the time, I think, she is doing finely."

4th, 1 P. M. "Pulse 96, and soft; tongue cleaning at tip and edges; had some pain in bowels last night, which appeared like wind passing through them; secretion from the kidneys is more abundant, and quite clear; pain in the left groin and front of thigh less severe than yesterday."

5th, 2 P. M. "Pulse 100, and soft; skin moist; less thirst; distension of abdomen entirely subsided; no pain; complains of feeling hungry."

6th, 3 P. M. "Pain in the bowels like flatus; swelling and tension in the right iliac region—otherwise the abdomen is soft, free from tension, and not tympanitic; pulse 112, and weak; skin moist; considerable thirst; tongue clearing; urine abundant, but more highly coloured."

7th, 3 P. M. "Pulse 96, and soft; skin pleasant; no thirst; no pain in the abdomen; tongue almost clean; feels hungry."

8th, 3 P. M. "Some soreness, tension, and swelling in left iliac region, but no

pain; pulse 96, and soft; skin moist; tongue clean and moist; has had but little thirst for the last two days; says she feels quite smart."

9th, 7½ A. M. "Rested well last night; no pain or uneasiness from flatus since last evening; pulse 88; skin cool; urine abundant and clear; abdomen soft; no tenderness over the abdomen, except in the left iliac region; wound looks well."

10th, 9 A. M. "Rested well last night; pulse 88, and more full; tenderness in the left iliac region almost gone."

11th, 7 P. M. "An enema produced a dark liquid motion; pulse 76, full and soft; feels better to-day than usual."

17th. "Since my last report M. G. has progressed finely. Since the enema was administered her bowels have been moved regularly every day, and she has rested well at night. The wound has almost entirely closed, and there is no pain, soreness, or swelling about the wound. She was allowed to sit up on Monday last for the first time, since which she has been up for the greater part of the day. Her usual ruddy complexion is again reappearing; her general condition seems to be improving."

26th. "M. G. is doing finely; her appetite is good, and she is regaining flesh quite fast."

Aug. 31. Dr. Hartman called to-day to say that Mary had entirely recovered. He says that in May, 1860, she weighed 150 pounds. Now, she weighs 92 pounds, having walked out and weighed herself.

Sept. 12. Mary came to Philadelphia, and called to see me to-day. She is perfectly well. She now weighs 103 pounds. She was at a picnic last week, seven miles from home.

About a year after the operation she came to this city in company with a man with whom she lived as his mistress. She became pregnant by him, and was delivered of a still-born child at nearly full term. Premature labour was produced by his abuse, otherwise she thought she would have carried the child to full term. Soon after this she became a public prostitute, and frequented the lowest dens of the city. Her first admission to the Philadelphia Hospital (Alms-house) was some eighteen months since, in the venereal wards, and she has been three times since an inmate of the medical wards, her last admission being on Sept. 24, 1867. She was then suffering with an attack of typhus fever and the results of debauch and exposure. She died Oct. 9, 1867.

Since the operation menstruation has frequently occurred, but at irregular intervals and in smaller quantity than usual.

During her illness, an examination of the abdomen by Dr. J. Ewing Mears, led to the discovery of the cicatrix, and he kindly called attention to this more than usually interesting case. The facts as to menstruation and the nearly completed pregnancy were obtained from two of her intimate friends in the ward, to whom she had confided these facts, together with the nature and time of the operation and the name of the operator.

Autopsy, Oct. 11, by Dr. W. W. Keen.—When examined externally no discoloration was seen save at the cicatrix, which was quite dark. The adipose tissue of the belly was one inch in thickness, save where the belly walls became exceedingly thin at the cicatrix, the two recti muscles being separated about two and a half inches. On opening the abdomen, no trace of peritonitis of any age was to be seen—not a single adhesion existed at any point. The pedicle was adherent to the cicatrix, and on each side of it the peritoneum was continued to the brim of the pelvis. By means of these two broad attachments, a large number of vessels found their way to the uterus, and the remaining right ovary. The right ovary, Fallopian tube, &c., were healthy, save that a cyst of the size of a pea

existed at one point. The ovary also showed a very marked and recent corpus luteum, probably but a very few days old. The uterus was very much tilted upwards to the left side by the traction of the pedicle. Its neck was greatly elongated. The os uteri was not fissured, and the rugæ on the vagina were still distinct. The specimen is in the Museum of the College of Physicians.

Nov. 28. Secondary Medullary Carcinoma of the Liver.—Dr. S. W. Gross, in presenting this specimen, gave the following account of the case :—

In October, 1866, Dr. S. D. Gross removed from the left labium of a German lady, 46 years of age, a tumour of an apparently fibrous nature, and of the size of a Sicily orange. It was free from pain and discoloration, of a firm, slightly elastic consistence, and of a somewhat pyriform shape, having a small base, which extended to a considerable depth. On section, it displayed a dense, firm tissue; but it was not subjected to microscopical examination, nor was it suspected to be of a malignant nature, although the subsequent history of the case renders it highly probable that it was incipient primary encephaloid of the labium.

After the lapse of four months the lymphatic glands of both groins began to enlarge and become painful, and six weeks subsequently she suffered from pain in the epigastrium. A swelling soon afterwards appeared in this region, and in the middle of June, when she went to the country for the benefit of her general health, it had become quite prominent.

I first saw the patient in the latter part of August, when the glands of both groins had attained the size of a small fist. They were extremely painful; the integuments were discoloured, and the cutaneous vessels were much enlarged. The tumour in the epigastrium and left hypochondrium was very prominent, pushing forwards the ensiform cartilage until it was bent upon itself to nearly a right angle, and rendering the integuments of these regions very tense. The lower border of the mass could be traced at about two inches above the umbilicus, but the extent of the encroachment upon the left hypochondrium could not be determined, as manipulation was productive of great suffering. There was no jaundice; the urine was normal; the bowels regular, and the stools of proper consistence and colour, thus showing that the functions of the liver were not interfered with. The colour of the skin was natural; the woman was pale and emaciated; but the peculiar cancerous cachexia was absent. She never suffered from nausea or vomiting, and her only complaints were increasing debility and pain. The case progressed in this way until the 16th of November, 1867, or thirteen months from the date of excision of the tumour of the labium, when death ensued apparently from sheer exhaustion.

Autopsy, thirty-eight hours after death.—Rigor mortis but slightly marked; body greatly emaciated.

The liver was enormously enlarged, and extended deeply into the left hypochondriac region, and downwards five inches below the ensiform cartilage; its entire weight was fourteen pounds. The cancerous deposits were confined almost exclusively to the left lobe. The forms of encephaloid seen in the liver were the tubercoid and infiltration of the hepatic parenchyma. Two isolated masses occupied the right lobe, both of spherical form, and of the size of large walnuts. One was seated superficially on the upper surface of the lobe, and presented at its centre an indentation, in which

the peritoneal covering was opaque and thickened. The other tumour was seated about two inches below the surface. The whole of left lobe was one mass of disease. Very numerous nodules were scattered throughout its entire extent in the periphery, and deeply seated. Some of these were very adherent to the adjoining hepatic structure, while others were more easily detached, and invested by a delicate capsule. The greater part of the parenchyma of this lobe, however, was infiltrated with the disease, and the extra-cancerous tissue had undergone fatty transformation. On incising this lobe, about twenty-four ounces of a dark-brown fluid were discharged, leaving an irregular cavity, which was circumscribed by a membrane of new formation. The peritoneal covering bore marks of inflammation, and the liver was firmly adherent at several points to the diaphragm, as well as to the pyloric extremity of the stomach. The gall-bladder was half filled with bile. Pancreas indurated, apparently from chronic inflammation; the spleen was very small; but the other abdominal viscera were normal. The peritoneal cavity contained nearly a gallon of bloody serum.

The superficial and deeply-seated *lymphatic glands* of both groins were enlarged to the size of a fist, and the integuments covering them on the point of ulceration. The tumour of the left side, in particular, was breaking down, and its interior contained some bloody fluid. The femoral rings were completely occluded by enlarged glands, and the iliac and lumbar glands were very extensively involved, their size varying from that of a pea to that of a pigeon's egg.

The anterior mediastinal glands were also very greatly enlarged, and there was double hydrothorax. The sac of the pericardium contained an ounce of limpid serum; the walls of the heart were fatty, but the lungs presented no abnormal appearances.

Dr. William Pepper, who was kind enough to take charge of the specimens a few hours after their removal, subjected them to *microscopical examination*, with the following results:—

“Examination of the encephaloid deposits in the lymphatic glands, either in the groin or the abdominal cavity, showed very numerous round, clear cells, larger than normal lymphatic gland-cells, with scanty granular contents, and one, or, in a few cases, two round, nucleolated nuclei. The firm solanoid nodule in the right lobe of the liver presented no true fibrous stroma, but contained numerous large connective tissue corpuscles, and many cells of irregular shape and size, with single, large, clear oval nuclei. The huge mass in the left lobe was evidently in an advanced stage of degeneration. The shreddy yellowish lining of the central cavity contained only granular fatty matter, with numerous round, granular corpuscles, resembling pus-cells. Throughout the inner portion of the walls, also, the cells were much shrivelled, and mixed with a great deal of hematin and free fatty matter, and many compound granule-cells. In the outer, grayish-pink parts, few evidences of disintegration were present, and many large multi-nucleated cells were observed.”

It is interesting in this case to note the mode of propagation of the disease. Commencing as a tumour of the left labium, the cancer-germs were transmitted by the lymphatics to the inguinal glands, and thence along the iliac and lumbar glands to the liver. From the upper surface of the left lobe of the liver, which was the principal seat of the deposit, the lymphatics which pierce the diaphragm near the left lateral ligament carried the encephaloid germs to the glands of the anterior mediastinum, where the progress of the affection was arrested.

Dec. 26. Head of the Thigh-Bone removed by Excision on account of Gunshot Injury.—Dr. S. W. GROSS exhibited a specimen of gunshot wound of the head and neck of the left os femoris, which had been removed by operation by Dr. F. H. Gross, of Philadelphia, formerly Surgeon U. S. Volunteers, and Medical Director of the 14th Army Corps. By some strange oversight this operation has not been included among those reported by Assistant-Surgeon Otis, U. S. A., in *Circular No. 6, S. G. O.* Making, as it does, the forty-second authenticated example of this operation, as performed by American surgeons during the late war, Dr. Gross thought that a brief abstract of the history of the case, as furnished by the operator, would prove of interest.

Private Michael Welsh, Co. H., 10th Regt. Ky. Vols., aged 40 years, was struck by a conoidal ball in the region of the left great trochanter, at the battle of Chickamauga, September 20, 1863, and at once conveyed to a field hospital, which soon after fell into the hands of the enemy. Ten days subsequently, he was brought to Chattanooga, Tenn.; and during the period of his captivity the only nourishment that he received was a small portion of corn-meal gruel daily. Having lost his blankets, he also suffered much from cold, and had contracted a rather severe bronchial inflammation. On the 1st of October, he was admitted into the general field hospital of the 14th Army Corps, when a conoidal musket ball was removed from among a mass of small fragments of the neck of the femur, the ball having entered just anterior to the great trochanter. Two days subsequently, Surgeon F. H. Gross carried a curvilinear incision, with its convexity presenting forwards and including the opening made by the ball, from above downwards, and excised the head of the femur along with the attached greater portion of the lower surface of the neck of the bone. Many fragments were removed with the forceps; but as the trochanters were not involved in the injury, the remaining sharp portions of the neck were trimmed off close to the inter-trochanteric lines, which completed the procedure. No ligatures were required; the man bore the operation well; and the limb was placed in a comfortable position.

From the date of the operation up to 20th of October, the man did very well, in spite of his enfeebled condition and bronchial trouble, when the discharge from the wound became sanious. On the same night he had a chill, and was delirious, and the pulse was very feeble and frequent. On the 25th inst., his condition is thus described: "Pulse 125 and very feeble; tongue dry and red; had a natural alvine evacuation. At 9 A. M., hemorrhage recurred from the wound, which was arrested by injecting a solution of subsulphate of iron. Stimulants freely administered, but the man grew more and more feeble, and expired at 2 P. M."

No post-mortem examination was held, but death was evidently due to pyæmia. The specimen shows that about one-fifth of the head, at its upper aspect, has been shot away, together with the entire upper surface of the neck, about one-half of the anterior and posterior surfaces and the lower border of the neck remaining.

In commenting upon this case, Dr. S. W. Gross made the following remarks upon the operation of excision of the head of the thigh-bone in army practice:—

"In a review entitled '*Military Surgery*,' which I contributed to the *American Journal of the Medical Sciences* for Oct. 1867, I gave the statistics of 43 excisions of the hip-joint for gunshot injury. Since the

"Of these 58 cases, 7 recovered, and 51 died, thus affording a mortality of 87.93 per cent. As far as can be ascertained, 13 operations were primary, with 12 deaths, and 30 were secondary; with 26 deaths; and in 15 the precise date of operation is uncertain, but of these 13 were fatal. The results of the procedure in army surgery may, therefore, be thus expressed:—

“ Death followed in 21 from exhaustion, in 6 from pyæmia, in 3 from secondary hemorrhage, in 1 from the shock of the operation, in 1 from hectic, in 1 from internal hemorrhage, in 1 from gangrene, in 1 from acute peritonitis, in 1 from colliquative diarrhœa, in 1 from cholera, and in 14 from an unknown cause.

“ Although the discussion of therapeutics and operations may be somewhat out of place in this Society, I am yet impelled to bring before it certain statistics of amputations at the hip-joint which may be of service in estimating the comparative advantages of excision and disarticulation for gunshot injuries of the head and neck of the thigh-bone. In the paper already alluded to I tabulated 137 hip-joint amputations, and have since collected 29 additional cases, thereby increasing the number to 166. Of these, 53, with 9 recoveries, were performed by American surgeons during our late war.

"Of these 166 operations, 24 recovered, and 142 died, thus affording a percentage of mortality of 85.54. 68 were primary, with 3 recoveries; 71 were secondary, with 17 recoveries; and in the remaining 27 cases the time of operation could not be ascertained, but of these 4 were cures. The results of the operation in army surgery may, therefore, be expressed as follows:—

“A comparison of these statements shows that excision of the hip-joint is attended with greater risk to life than disarticulation at the joint. Primary excision is 3 per cent. less fatal than primary amputation; but secondary excision is 10 per cent. more unfavourable than secondary disarticulation. Regarding, then, the operative treatment of gunshot fractures of the head and neck of the thigh-bone, from a statistical point of view, the chance of saving the patient is manifestly on the side of secondary amputation, the mortality of the procedure being 16.25 per cent. less than that of primary excision; 10.61 per cent. less than that of secondary excision, and 19.53 per cent. less than that of primary amputation.”

ART. XIII.—*Proceedings of the Clinico-Pathological Society of Washington, D. C.*

1866. January 13. *Gonorrhœa Complicated with Urethral Chancre.*
—The following case of this was reported by Dr. S. J. TODD:—

On the 23d of January, 1865, I was consulted in my office by Mr. A——, an Englishman, æt. 27, married, and printer by trade, for an attack of gonorrhœa of two weeks' standing. Had been under no regular treatment, but had taken mixtures containing copaiba, enbebs, &c., and had used injections, but without benefit. On examination all the symptoms of gonorrhœa were found, but no abrasion or lesion existed on the glans or prepuce. Ordered saline cathartic, rest in the horizontal position, and a low diet. Before leaving he told me he thought he had given the disease to his wife, as he had had connection with her before he knew the nature of his complaint. 24th. No pain in micturition; prescribed copaiba in capsules, as his stomach was irritable. Says his wife has a discharge, and complains of heat and burning when she voids her urine. She refused to be examined or to consult a physician, but took the same medicine as her husband throughout the treatment. Both cases were apparently doing well, when, on the 22d of February, three weeks from the time he first came under my notice, and five weeks after the impure intercourse, he called my attention to a bubo situated in the right groin; the glands in the left being indurated and enlarged; the discharge was less copious and more watery. He assured me that he had not had intercourse with any female since he had been under my charge, nor had he ever had any venereal disease; which statements I believed, for he had been confined to his room most of the time on account of the severity of the symptoms, and no cicatrix or any evidences of a previously existing ulcer could be found. I considered the bubo as sympathetic, and advised the external use of the tincture of iodine and absolute quiet. At the next visit, in examining carefully the preputial folds, for I still suspected the presence of an ulcer, I noticed a hard, firm tumour, the size of a bean, in the urethra, about an inch and three-quarters from the meatus. I concluded I had found a urethral chancre which was the cause of the indolent bubo and the indurated ganglia, and prescribed a mercurial plan of treatment. On the 25th of February my diagnosis was confirmed, for a syphilitic erythema made its appearance on the upper part of the body, particularly well marked on the palmar surface of the forearms and at the bend of the elbows. He informed me his wife had induration of the inguinal glands and swellings behind her ears. The history of this case ceases at this point, as the patient was suddenly called from the city, and I have not heard of him since.

March 10. *Pseudo-Membranous Croup, and a Case of Diphtheria, with Tracheotomy.*—Dr. D. W. PRENTISS reported the following cases:—

January 27th, 1866, I was called to see the child of Mr. K., a little girl one year old. At this date she had all the symptoms of ordinary catarrh, with an exacerbation of fever each morning. The fauces and pharynx were slightly red, and a very little swollen, but there was neither difficulty in breathing nor swallowing. She had had whooping-cough during the winter, the remains of which still lingered, two or three mild paroxysms occurring in the course of twenty-four hours, one of which

seized her during my visit, so that I had an opportunity of noticing that the cough had not the hoarse, ringing sound of croup. Ordered an expectorant, containing a small quantity of hydrocyanic acid.

On the following day the patient was not so well; had had an attack of dyspnoea during the night, and, at the time of visit, some difficulty of breathing still remained. The throat was about in the same condition as the day previous, perhaps a little more swollen; no appearance of false membrane. Attempted to auscultate the chest, but failed on account of the child's cries and struggles. No febrile disturbance or loss of appetite. Fearing diphtheria, which was prevailing, tincture of chloride of iron, and chlorate of potash were added to the prescription.

January 29th, patient worse, the dyspnoea being more marked than yesterday, with "croupy" cough; the distress constant, the child no longer showing interest in its playthings; thirst urgent; pulse quick, but not feeble; tongue clean at edges, and coated with white fur in centre and far back; appetite apparently good, and swallowing unimpaired, although she cannot take the breast on account of the nostril being occluded by mucus. Throat about the same; no false membrane visible. Ordered emetic of compound syrup of squill $\mathfrak{z}$ ss doses every two hours until dyspnoea is relieved. Iron and potash mixture continued.

January 30th, condition of patient worse in every respect. Had a decided "attack of croup" during the night; breathing loud and snoring; head thrown back, and chest forward, to assist in respiration; child drowsy, and expression of face anxious. No false membrane on fauces or tonsils. The first dose of compound syrup of squill produced vomiting, with temporary relief; subsequent doses only induced nausea. Ordered iron mixture to be discontinued. To be taken every fifteen minutes until free emesis, one-eighth grain tartar emetic; one-sixth grain of calomel every two hours, and flannel band around abdomen, on which to be rubbed $\mathfrak{z}$ j mercurial ointment. At evening visit patient still worse; tartar emetic had not produced emesis, although two grains were taken; the calomel had caused free bilious stools. The dyspnoea was now more distressing, and the whole condition less favourable than in the morning. I administered $\frac{1}{4}$ gr. doses of tartar emetic at short intervals, remaining myself to watch the effect; but no vomiting followed. Next $\mathfrak{z}$ j doses of powdered alum in molasses every fifteen minutes until four doses were taken, causing slight emesis. This seemed to give relief, and orders were left to repeat if necessary.

January 31st (2 o'clock A. M.), was called up in the night on account of a more severe attack of dyspnoea than any preceding. By the time of my arrival it had passed over, but she was evidently worse than before. The alum had been repeated without any effect. Sulphate of zinc was ordered every half hour, in 10-grain doses, with the hope of dislodging the false membrane.

12 o'clock M. no change for the better; the sulphate of zinc failed to act after the first dose. On examining the throat, patches of false membrane were discovered for the first time. The dyspnoea had increased to such an extent that the child's whole attention was occupied with the function of respiration. Ordered permanganate of potash in solution internally, and apply locally a strong solution of nitrate of silver (40 grs. to f $\mathfrak{z}$ j). Sulphate of copper in 1-grain doses was given as emetic, and a blister $2\frac{1}{2}$ by 1 inch applied to front of larynx. Wine and beef-tea to support the strength, which had not until now begun to flag.

From this date, January 31st, the patient continued steadily to grow worse, until February 3d, when a convulsion occurred; another took place during the night—the forerunner of death, which closed the scene on the morning of the 4th. On the evening of the 3d, however, at the request of the family, another physician was called in consultation, and by his advice ten grains of turpeth mineral (sulphate of mercury) were ordered in four doses, all of which were administered without effect.

Three points connected with this case are interesting and worthy of notice, viz: 1. The obscurity of the diagnosis; 2. The insusceptibility of the patient to the action of remedies; and, 3. The steady approach of the fatal result. In regard to the first of these it will be noticed that *membranous croup* was diagnosed, and also that three days elapsed before a definite opinion was formed. The diagnosis between *diphtheria* and *pseudo-membranous croup* would seem to be simple enough, if text-books are taken as the guide, and so indeed it *may* be, if well-marked cases of each are before the observer. But when rules come to be applied to *practice*, where every gradation, from well-defined examples of either down to cases in which both seem intimately blended, is found, it is a matter which requires careful thought and some experience to determine the true character of the disease, and apply the proper remedy. In the case under consideration, the previous existence of *pertussis*, the remains of which still lingered, complicated the diagnosis in the commencement, for an intercurrent attack of catarrh is by no means unusual in this latter affection. The dyspnœa, also, occurring the night after the first visit, and the slight redness of the fauces noticed the next morning, might naturally have been attributed to the same cause. The peculiar hoarse cough, however, did not occur until the third day, when, for the first time, signs of constitutional disturbance began to manifest themselves. This condition continuing to grow worse, false membrane was discovered upon the tonsils and fauces on the fifth day; but still there was no flagging of the pulse, no prostration of the strength, and but little loss of appetite. The insufficient aëration of the blood, in consequence of the obstruction to the air-passages, now began to produce its legitimate results. The pulse became very frequent and feeble, the face dusky and somewhat swollen, the skin hot and pungent, the mind dull, and the whole system prostrated. The patient's condition was precisely similar to that of the one on which tracheotomy was performed for *diphtheria*, to which reference will be presently made. Up to the fifth day, then, the case bore, in a marked degree, the impress of *true croup*; after that day, it had emphatically all the characteristics of a bad case of *diphtheria*. The value of this latter fact, in relation to the original diagnosis, is a very important consideration: Whether the blood-poison, from a want of proper respiration, furnishes sufficient explanation of the change in the form of the disease towards the last; or whether it is necessary to suppose a specific blood-poison, as is acknowledged to exist in *diphtheria*, to account for the almost identity of the advanced stages of the two diseases in question. The former of these hypotheses accords with the generally received opinion that the diseases are essentially distinct; while the latter hypothesis, if accepted, favours Trousseau's views, that the affections known as *pseudo-membranous croup* and *diphtheria* are one and the same. The discussion of the different views are left open to the Society.

The second point that has been mentioned as interesting, is the insusceptibility of the patient to the action of remedies. In regard to this, it is

only wished to record the fact. The medicines given to produce emesis were finally increased to the full dose for adults without having any effect. The wine and beef-tea were administered with no better result; the calomel only acted on the liver and bowels.

The third point, namely, the steady approach of the fatal result, seems to depend somewhat upon the facts last stated, for we know how little hope there is in a disease with such slight tendency to favourable termination as *pseudo-membranous* croup, if the case be seen so late that remedial agents cease to produce their legitimate results. The same principle applies, whether the patient be seen late or early, if our therapeutics prove to be of no avail. In this instance, the change for the worse was perceptible day by day—and, indeed, one might say, hour by hour; the unfavourable progress was so regular in its course.

As regards the treatment pursued but little need be said; it was such as seemed to be indicated by the nature of the disease and the symptoms. The *blisters* was applied as a last resort, when all else seemed to fail, and apparently, for a few hours, gave more relief than any other remedy used. We are aware of the objections to blisters in young children, but where life is in immediate danger, we can afford to anticipate some trouble in the healing, if the *life* is only preserved.

One other point remains to be noticed in connection with the treatment, and that is *tracheotomy*. Why was this not performed? For three reasons, viz: 1. The disease had extended into the bronchial tubes; 2. The age of the child; and, 3. The seeming barbarity of the operation on a helpless infant already doomed to death. In narrating symptoms, an attempt and failure to auscultate the chest at the first visit was mentioned; as the affection advanced, however, and the little patient became listless, this was accomplished, and the larger bronchi found obstructed, and the lungs congested. The chance of success from opening the trachea, in this state of things, was very small.

Of the second reason—this child was just one year old. Referring to this point in his late work, entitled *Medical Clinic of the Hôtel Dieu*, Tronsséan says: "It (tracheotomy) is less likely to prove successful in adults than in children, for reasons already given; *in infants it offers but little chance for saving life; the author has seen but two successful cases under two years of age—one at thirteen months, and the other at only six days less than two years.*" This comes from a physician who has performed the operation in this disease and diphtheria more than two hundred times, with success in more than one-fourth the cases.

As to the third reason, it is not one which should deter us where there is a reasonable hope of success, but only a circumstance that may very properly have its influence in determining the question when it is of doubtful propriety.

Diphtheria and Tracheotomy.—I was called by Dr. N. S. Lincoln, on the 30th of November, 1865, to assist in performing tracheotomy in a case of diphtheria. The patient, a boy aged six years, of delicate constitution, had been taken sick November 24, with slight sore-throat; but the physician was not sent for until the 26th, when diphtheria was developed. The treatment of tincture of chloride of iron, chlorate of potash, and permanganate of potash, was ordered with no apparent good effect. The constitutional disturbance became more marked; the diphtheritic membrane increased, and extended downwards; and the respiration became seriously impaired. The patient continued to grow worse until the after-

noon of November 30, when suffocation was imminent, and it was determined to operate for the possible chance of prolonging life until nature could throw off the disease. The case was explained to the family, and, with their consent, Dr. L. operated at half-past four o'clock P. M. An incision, about two inches in length, was made in the median line downwards from the larynx, the skin dissected back, the muscles separated by the handle of the scalpel, and the trachea exposed just below the cricoid cartilage. A very free flow of dark-coloured blood followed a slight incision to enlarge the wound, apparently coming from the thyroid body. It was controlled by a ligature. A circular piece of the tracheal ring was cut out, and the wound kept open by wire hooks attached to an elastic band passing around the neck. A piece of false membrane was extracted from the opening, and the operation was complete. Relief was instantaneous; the breathing became gentle and natural; the sense of suffocation and distress was gone, and the patient dropped into a quiet sleep. A gauze veil was thrown over the opening, and the patient returned to bed. The amount of blood lost was about two ounces. The breathing continued good for three hours, when mucus accumulating in the air-passages, excited a troublesome cough. At 3 o'clock A. M. the physical signs of pneumonia were developed, the dyspnœa again became marked, and the little sufferer died at 4 o'clock P. M. the same day—twenty-four hours after the operation was performed.

The reason of the operation not proving successful was self-evident—the membranous deposit extended down the trachea below the point opened, and also probably into the bronchi. The development of pneumonia is the most common complication of this disease, and was therefore not unlooked for; but remedial agents were of no avail.

It is an interesting question in this case, whether if the operation had been performed earlier, the result might not have been more favourable? Also whether it would have been justifiable so long as any hope of relief, by less heroic measures, remained?

During the discussion which followed the reading of the case, Dr. Wm. Lee mentioned a case of tracheotomy for croup which came under his observation at Smallpox Hospital, Blackwell's Island, New York. Child, eighteen months' old, was placed, after the operation, in a closed bed, where the atmosphere was kept moist by a jet of steam. Patient lived three days, and was in a fair way to recover, when, by an accident, the bed was set on fire, and the child had to be removed to a cold room, which proved fatal.

Dr. H. P. Middleton, speaking of the insusceptibility of the first of these patients to the action of remedies, called attention to the same fact, as characterizing the case previously reported by himself to the Society. (*Proc. Clinico-Path. Soc. of Washington, D. C., Am. Journ. of Med. Sciences*, Jan. 1868.)

May 5. *On the Causes of Alopecia and of its Greater Frequency in Males than Females.*—Dr. A. F. A. KING, after referring to the statement of Wilson (*On Diseases of the Skin*, 3d edit., pp. 608, 609) that the cause of alopecia occurring in persons of advanced years was to be "sought for in an impediment to circulation through the textures of the scalp of the upper part of the head," presented some remarks endeavouring to establish the proposition *that the impediment to the circulation referred to was due to compression—either partial or complete—of the arteries supplying*

the scalp by pressure of tight-fitting hats. The vessels were compressed, and, consequently, the amount of blood flowing through them diminished by the impinging of a hard hat-rim upon the resisting protuberances of the cranium.

In support of this proposition Dr. King mainly relied upon the greater frequency with which the disease occurred in males than females, hats being worn as a general rule only by the former. Those worn by women did not come low enough on the sides of the head to compress the arteries, but rather rested on the top secured by strings. Moreover, men being more in the open air wore their hats during a longer period than females. If the idea of Wilson was correct that this difference between the sexes depended upon a larger quantity of adipose tissue being situated beneath the integument of the scalp in the female, whereby a more easy and unimpeded transit was afforded for the minute vessels to the capillary plexus of the derma, it might still be a question whether the extra amount of fat *itself* in women was not dependent upon the same freedom of circulation in the scalp which secured them a better supply of hair.

Dr. K. next referred to Fig. 209 of *Gray's Anatomy* (2d Am. edit., p. 374), and showed how a line drawn across it, representing the hat-rim, would strike the branches of the anterior temporal arteries over the frontal protuberances, the region where the hat pressure was most severe. It would also compress the posterior temporals at or near the parietal ridges, and the occipitals in the same way behind. The reason why baldness occurred in different localities in different individuals was, probably, due to a difference in the shape of the head. A long skull, where the hat pressure would be most exerted on the forehead (and, consequently, on the anterior temporal arteries) and occiput, would lose its hair soonest from the top and anterior portion; and, probably, also to some extent low down behind from pressure of the occipital artery. This last vessel, however, does not contribute very much to the circulation on the top of the scalp. When a patch of baldness exists about the vertex we might expect to find a *wide* head, the posterior temporal arteries, which supply the locality referred to, being compressed against the parietal bones. The little tuft or island of hair so often observed, left by itself on the top of the forehead, was nourished by the two supra-orbital arteries, these vessels having escaped hat pressure by passing over the forehead in the slight concavity between the two frontal eminences.

To say that the pressure of a tight-fitting hat exerts *no* influence upon capillary circulation in the scalp is unreasonable. In the absence of a bandage, in a case of hemorrhage from a wounded branch of the temporal artery, how could we better arrest the bleeding than by placing on the patient a close-fitting hat, a compress being adjusted under its rim immediately over the trunk of the vessel!

Below the hat-rim, where the circulation is not impeded, we invariably find the hair to remain good, though the top of the head may, at the same time, be entirely bald.

In many cases of alopecia where all recognized causes of the disease are from the circumstances of the case excluded, there is no other plausible way of accounting for the disease than by the deranged circulation occasioned by pressure upon the arteries.

In conclusion, Dr. K. recommended as a prophylactic measure the manufacture of hats made so as to embrace the head at points or surfaces where

no considerable vessel would be compressed, or hats made to order for each individual might be arranged with a notch or semi-circular concavity in the rim over the spot of skin under which the artery passed.

If the anatomy of the part was explained to intelligent hat-makers, it is probable some one of them might devise a modification of the present form of hat which would be less destructive to the hair.

The cost of such an innovation to consumers would hardly exceed that annually expended in the purchase of quack nostrums in the form of "hair restoratives."

May 12. Hemorrhage following Abortion, treated by Injections of Persulphate of Iron into the Cavity of the Uterus.—Dr. C. M. FORD related the following case:—

Mrs. F., Irish, aged 28, plethoric habit; had a miscarriage at three months on the night of March 23. Saw her for the first time the next morning, when the following symptoms were presented: Face pale; pulse 120, and weak; tongue very pale; extremities cold; complains of severe pain in the back; no urine passed for twenty-four hours; bowels had been opened during night. Digital examination discovered the vagina to be filled with coagula; os uteri dilated sufficiently to admit index finger; placenta found still adherent to uterine walls, but could not be detached. The flooding, which still continued, had commenced twenty-four hours previously, and had now reduced the patient to a dangerous condition of debility. Drachm doses of tincture of ergot were administered, and cold applications made locally. This failing to control the hemorrhage, the tampon was applied, and stimulants ordered. At 3 o'clock P. M. the flooding was still considerable, notwithstanding the presence of the tampon; this latter was therefore removed, and the os uteri being found more dilated, the hand was introduced, and the most of the placenta removed—a small portion only, which could not be reached, remaining in the fundus. The pulse was now hardly perceptible. Ordered brandy and laudanum freely. The hemorrhage again commencing, a solution of one drachm of persulphate of iron to four ounces of water, was injected into the uterus through the long leaden tube belonging to Tiemann's universal syringe. The hemorrhage was immediately arrested, and did not again return. The remaining portion of the placenta came away without difficulty on the 27th, and convalescence was quickly established.

NOTE.—*Jan. 1, 1868*, Dr. Ford has treated three cases of uterine hemorrhage with astringent injections since reporting the above case. In two instances the flooding followed abortion; in the third, the trouble was menorrhagia. Solution of tincture of perchloride of iron, of the strength of $\text{f}\mathfrak{z}\text{j}$ to $\text{f}\mathfrak{z}\text{ij}$ of water, was employed instead of solution of persulphate, and in each case with the same encouraging result.

REVIEWS.

ART. XIV.—*Obstetric Clinic; a Practical Contribution to the Study of Obstetrics and the Diseases of Women and Children.* By GEORGE T. ELLIOT, JR., A. M., M. D., Professor of Obstetrics and the Diseases of Women in the Bellevue Hospital Medical College, Physician to Bellevue Hospital and to the New York Lying-in Asylum, &c. 8vo. pp. 458. New York: D. Appleton & Co., 1868.

THIS may be said to belong to a class of books which are “after the practitioner’s own heart.” In them he finds a wider range of cases than comes under his observation in ordinary practice; in them he learns the application of the most recent improvements of his art; in them he finds the counterpart of cases which have caused him the deepest anxiety; in them, too, he may find consolation, for the regret—the offspring of limited experience, which has always cast a shadow on the remembrance of some of his fatal cases—will pass away as he reads of similar ones in which far greater resources of every kind failed to avert a fatal termination.

There are not many books of this kind in our language; they can probably all be numbered on the fingers of a single hand. Among the best of the kind are the *Clinical Observations in Midwifery* of the elder Rambotham, and the *Difficult Parturition* of J. Hall Davis; the former, now out of date in regard to some points, but in its day a most excellent work, as the latter is now, and both will serve as models and examples of what such works should be. In these works principles are plainly laid down and doctrines briefly stated, to which cases are appended illustrative of each; or, reversing the order, the cases are first detailed, and a commentary presents the theory.

We think, then, that Dr. Elliot has been exceedingly happy in his choice of a subject, entering a field but little worked, and one of great practical value. His opportunities and position have been and are such as to enable him to do justice to the subject; the cases which make up the bulk of the work have been selected from among the most interesting occurring during fourteen years’ service in Bellevue Hospital; and the resources of private practice have not been neglected. The *motive* of the book, too, as set forth in the preface, is an honourable one, and furnishes an example which ought to be generally followed: “The work is presented as a partial discharge of the debt due to the profession by all who enjoy hospital advantages; and in grateful recognition of the benefits which the author has derived from the recorded experience of others.”

Many circumstances concur, therefore, to influence us to extend to this work a cheerful welcome, and to commend it as fully as possible. We do thus welcome it; as the production of a gentleman of great experience, acknowledged ability, and high position—as an emanation from one of the leading schools of our country, and as an honourable addition to our national medical literature. But these very points of authorship and science challenge a close examination as to the merits of the work, and our

duty to the profession as journalists imperatively requires an unbiassed judgment as to the manner in which Dr. Elliot has performed his self-imposed task. Our office would be far pleasanter could we follow the bent of our inclinations, and write nothing but what is favourable; yet unqualified praise, however gratifying to the feelings of an author, can justly be awarded to but few productions in any department of literature, and has unfortunately become so common as to awaken suspicion in regard to a book rather than to insure its success. If, therefore, in addition to much praise, which we can honestly give this work, we have some fault to find with it—and although we think that Dr. Elliot has in many respects fallen short of what he might have done with the same materials—we will endeavour not to be unjust or hypercritical, having no motive for either, and no feeling towards the author but those of high respect for his talents and attainments.

The work opens with eases and remarks upon one of the most important subjects of obstetrical medicine. The first three chapters, covering one hundred and twenty-six pages, are devoted to Puerperal Convulsions. And the subject is no less interesting than important—markedly so on account of the recognition, within very recent times, of certain interesting facts and symptoms relating to it, but especially so on account of the great variety of opinion and wide divergence of views upon almost every point connected with it, whether etiological, pathological, or therapeutical. Indeed, we do not believe there is another disease to which humanity is subject—unless, possibly, we except cholera—upon which so widely different and even diametrically opposing doctrines are taught by equally high authority. There is no little danger, from this want of harmony, that to the young man—who, leaving the text-book of his pupilage to study the subject in a wider range—will come skepticism instead of wisdom, and confusion instead of clearness of understanding.

The great causes of embarrassment to the student of this subject are a failure upon the part of writers to classify puerperal convulsions, and the lack of harmony among them as to the pathology of the disease. With some the convulsions of parturient women are hysterical, apoplectic, and epileptic; with others, simple, epileptiform, and epileptic, with numerous other divisions; with many there is no clearly marked line drawn between cases, and the fact that they are held to be of different nature is rather to be inferred than stated; the majority, perhaps, are careful to point out that the disease is not always the same, while by others again this is denied, and its unvarying unity stoutly maintained.¹ No error, we believe, can be greater than this; nothing, we think, should be more constantly kept before the mind of the student than that puerperal convulsions are *not* always the same—that, like dropsy, for instance, each case must be analyzed and its pathological cause determined; and that if the task be not always possible, in proportion as the rule is followed will an approach be made to scientific practice, and successful treatment be probable. From neglect of this has resulted much of the clash of testimony as to the value of certain remedies and certain modes of treatment.

Now, we are sorry to say that the work of Dr. Elliot is lacking in this important feature. There is no arrangement of the cases into groups, no attempt to furnish a clue to the intricacies of the known, or an index to

¹ "L'éclampsie est une affection toujours identique à elle même."—Joulin, *Traité complet d'Accouchements*, p. 1144. Paris, 1867.

point the direction in which progress will probably be made in the unknown. The slightest classification which could be made—one which, we feel compelled to say, could hardly escape being made—is that which is purely clinical in nature, dividing convulsions into those occurring before, during, and after labour; the latter especially divided from the others by some sharp therapeutical lines. But we have not even this; cases follow one another without any reference to time of occurrence, in regard to labour, and without any indication of a difference in nature. In one place we find a faintly expressed recognition of the fact that puerperal convulsions are not all alike:—

"Varieties of Puerperal Convulsions.—We need a term to distinguish such convulsions in a puerperal state as are general in character, with total abolition of consciousness, from those which are more or less incomplete, and of less dangerous significance. Hence the term eclampsia is as good as any other for the former, and the latter can be assigned to their special causes, so far as these are understood." (p. 56.)

Then follows a case, unique in the experience of the author, which has "hysteria" in every line of it, although it is not called hysterical, and we only infer that it is so considered by the author because it is followed by another case which "illustrates the severe hysterical type of convulsions, though not occurring in the puerperal state." We propose a modification of Dr. Elliot's paragraph so as to make it read: "We need a term to distinguish such convulsions in a puerperal state *that are unaccompanied by albuminous urine from those that are accompanied by it.*" There is a difficulty of language here; the disease is "puerperal," because occurring in the parturient woman, but by "puerperal convulsion" is generally understood those having an uræmic origin. The suggestion of the author to restrict the term "eclampsia" to the latter, is a good one, and we wish it could be generally followed; we shall use the word "eclampsia" in this article only as referring to puerperal convulsions attended by albuminuria. But we think it pertinent to inquire why the author, having thus far recognized a class of cases "of less dangerous significance," did not say something more concerning them, especially since he details two other cases (30 and 39) in which the urine presented no traces of albumen. The recognition of this class, and its marked separation from eclamptic cases, we hold to be of the first importance—the first step necessary in clearing the ground for the student.

The records of obstetrical medicine contain many of them; as most readily accessible, we may refer to the case arising from repletion and indigestible food, given by Bedford,² and the cases of Dr. Ingleby and F. H. Ramsbotham,³ where direct irritation of the uterus was the cause, the seizures following in both cases immediately upon introduction of the hand to remove the placenta. Other causes of these "simple" convulsions of some authors are distended bladder, loaded rectum, and they may have a purely psychical origin. But all these and other causes do not give rise to a large class of cases; how infrequent they are may be judged from the fact that their existence is denied by some, that Cazeaux mentions but

¹ "Finally, the observation of our patient, and other facts of which I have been witness, are in formal opposition to the law which it has been attempted to lay down, that in all women attacked by eclampsia the urine is albuminous."—Trousseau, *Clinique Médicale*, t. ii. p. 140.

² The Principles and Practice of Obstetrics, p. 488. New York, 1868.

³ Obstetrics. By Tyler Smith. Am. ed., p. 609.

two, while only three have occurred to the author, and another gentleman, of large experience in the same city, has never met with a case.¹

A complete classification of the subject would require the consideration of an "epileptic" form, distinguished as attacks of epilepsy during labour of those subject to this disease. But these are rare, for epileptics are not especially prone to seizures during parturition (*Elliot*, p. 128). In this our author agrees with other authorities. Also the "apoplectic" puerperal convulsion has always been recognized, a form in which coma preponderates over motor disturbance, and which too frequently can only be distinguished by an examination after death.

These, however, we will not here consider, but pass on to those which are accompanied by albuminuria, "eclampsia," and they by far outnumber all the others combined. But this class, again, is not composed of cases identical in character. In the majority of cases as soon as the pregnancy terminates the dropsy disappears, albumen is no longer to be found in the urine, and the patient returns to a state of perfect health. In the others, although the more prominent and distressing symptoms may subside, evidences of disease of the kidneys persist, and sooner or later a fatal termination ensues. In the one the albuminuria is dependent upon pregnancy, and may be termed "simple albuminuria," in the other it has its origin in organic disease of the kidney, the so-called Bright's disease. A recognition of these sub-classes we hold then to be of the very first importance, not only in the study of the disease but especially in practice where the prognosis, both to mother and child, depends greatly upon a differential diagnosis between the two. In this respect then we are again compelled to say that we find this work lacking; not only are the cases not grouped in reference to any such view of their pathological difference, but we do not gather any intimation that such a distinction may be advantageously made, or even that it has been made. Yet the later and best writers upon the subject draw the line between these kinds of eclampsia very plainly, and teach that in doing so we are advancing another step towards a better understanding of much that yet remains unknown.²

Can these cases be distinguished during their progress? Is there any means of telling whether the albuminuria of a pregnant patient is simply the result of pregnancy, or whether it is but a symptom of organic disease of the kidney? If these questions cannot be answered affirmatively, then

¹ A Lecture on Puerperal Convulsions. By T. Gaillard Thomas. N. Y. Medical Record, Feb. 1, 1867.

² "I have now to point out an error into which people are very liable to fall, namely, to look upon the albuminuria of pregnancy and pregnancy with albuminuria as one and the same thing, while in reality they are perfectly distinct. When we speak of the albuminuria of pregnancy we mean that the pregnant state induced the albuminuria, whereas when we speak of pregnancy with albuminuria we simply mean that a woman during the period of her pregnancy has been attacked with kidney disease.

"I have now to call attention to a third form of albuminuria and pregnancy, namely, that in which a patient already the subject of kidney disease becomes pregnant."—Harley, A Course of Lectures on the Urine and Diseases of the Urinary Organs, *Med. Times and Gaz.*, Dec. 16, 1865.

See also Basham on Dropsy and its Connection with Diseases of the Kidneys, etc. etc., p. 232. London, 1866.

Roberts, A Practical Treatise on Urinary and Renal Diseases, pp. 293-4. Philadelphia, 1866.

Tanner, too, makes the distinction between these two forms of the disease. On the Signs and Diseases of Pregnancy, p. 427. Philadelphia, 1868.

time spent upon this distinction of cases is time wasted. If they can be, it behooves the practitioner to be aware of the fact and acquainted with the means, for treatment depends greatly, prognosis almost entirely, upon the differential diagnosis. Dr. Elliot says they cannot be distinguished. We italicize a portion of the following paragraph.

"It is, however, very gratifying to remember that the urine of pregnancy may present *all those varieties and numbers of casts which are recognized in every stage of Bright's disease*, but that, after a fortunate labour, these conditions may disappear entirely, and the patient remain as well as those who have presented similar appearances after scarlatina and other acute diseases." (p. 12.)

Authorities are against the author. Frerichs looks upon casts as pathognomonic of Bright's disease. Dr. Harley relies upon the microscope and expresses no want of confidence in the aid it furnishes. Dr. Basham² says "a microscopic examination of the urinary sediment will promptly decide the point." Dr. Roberts³ in addition to the microscopic appearances gives a train of symptoms which tell strongly in favour of each form of the disease.

It certainly cannot be requiring too much of an author when he advances doctrines or makes statements not in accordance with those of others equally high in standing and equally competent to observe and reflect that he should give the individual facts bearing upon the question with minuteness and care, and attested by other witnesses. But the author has not taken the pains to group together the cases which illustrate this point, and to impress their importance in reference to so momentous a question as this, and we are therefore left with the general statement above quoted against the testimony of many other authorities. In the detail of all his cases of Bright's disease the results of microscopic examinations conducted by such men as Flint, Jr., Draper, and Alonzo Clark, are carefully given, but we look in vain for any information as to what bearing the presence or absence of "hyaline casts" and "granular casts" have upon the case. Of course the author is aware of their importance in every respect, but in assuming that his readers are as well acquainted with it as himself he has made a most unfortunate assumption for a book of instruction.

We are compelled to note, next, an entire absence of any notice of the most interesting and important pathological questions relating to this subject. We expected to find them, or some of them at least, in his statement of the "relations of albuminuria to pregnancy," arranged under seven heads. (pp. 10-11.) But we are not told that the author has learned anything from his extensive clinical experience as to whether the origin of the disease is urea in the blood, or whether under the influence of a ferment it is changed into carbonate of ammonia, and if so, what that unknown ferment probably is; he does not explicitly state whether he is an adherent of the "toxæmic" theory or not. We infer that he is, from the following paragraph, but that he does not accept the carbonate of ammonia as the agent:—

"I do not feel prepared to give an opinion regarding the efficacy of benzoic acid, lemon-juice, and tartaric acid in these cases of blood-poisoning. It is

¹ "In the albuminuria of pregnancy it is to the pregnancy and not to the kidneys that we must look for relief; in the case of the kidney disease associated with pregnancy, as well as in that of pregnancy associated with kidney disease, it is to the condition of the kidneys that we must specially direct our attention."
—Harley, *op. cit.*

² *Op. cit.*, p. 232.

Op. cit., p. 294.

better that they should be given, however, especially the latter, as they will not do harm, and are claimed on high authority to be efficient." (p. 36.)

By what high authority are they recommended? why are they believed to be efficient? Many who read this book will undoubtedly make these queries; but they will find no answer in it. Authorities upon albuminuria and uræmic eclampsia and their doctrines are totally ignored; Rayer and Simpson and Lever have published their observations; the treatise of Braun has been translated into our language; the work of Cazeaux, with his peculiar views, is in the hands of students throughout our country; the chemical theories of Frerichs have attracted the attention of the medical world, but not a word of the labours or doctrines of either can be learned from this book. To assume that Dr. Elliot is ignorant of either the men, their positive additions to our knowledge, or the theories they have advanced, would be preposterous; the only explanation can be the unfortunate assumption of knowledge on the part of his readers to which we have already alluded.

To these strictures the response will probably be made that this work is strictly clinical in character, and that, therefore, theories and doctrines are properly excluded from it. So far as the *discussion* of theories and doctrines is concerned the answer is good, but no further. It is the peculiar province of clinical teaching to illustrate principles by cases, and to distinguish between diseases of the same name which require different treatment, to lead the beginner through a maze of seeming contradictions, pointing out where there is similarity with apparent difference, and diversity where there is apparent similarity.

But, farther than this, we have a right to expect the expression of an opinion upon points so important as those we have touched upon, because twice in the very brief preface to the book the author tells us that it is published to illustrate and present his "views" upon practice; and yet we find no opinions expressed upon some of the most important and interesting points of our science in regard to which authorities are divided. It is just here that we suffered our greatest disappointment in the work; we did not find what we looked for with interest, and what had been explicitly promised.

We pass on to the treatment of eclampsia. Venesection and delivery are the time-honored and standard remedies; to these, in modern times, has been added a third, chloroform, the power and reliability of which in controlling the disease is marked by the fact that it is used by the advocates of every theory, having conquered for itself a high place in the estimation of those who were at first timid, or of those who, like Blot, strenuously opposed its use. There is yet, however, great diversity of opinion among authorities as to the relative position of these three remedies, as to whether the anæsthetic or bloodletting shall have the first place, delivery being, of course, always subject to the practicability of carrying it into effect. Dr. Elliot is emphatic upon this point:—

"If only one method of treatment were given to me for these cases, my choice would unhesitatingly be for chloroform. The chief indications are, to terminate the labour as speedily as may be justifiable, and meanwhile to keep the patient moderately under the influence of chloroform.

"In looking over my cases, while recalling some in which the agent was administered unskilfully, I see every reason for believing that chloroform is the most prompt and certain agent that we possess for moderating the violence and preventing the recurrence of the convulsions." (pp. 63-4.)

He very far prefers chloroform to ether, and thinks those exceptional

cases in which the use of an anæsthetic diminishes the force of the pains are about of equal frequency with either agent. With these views, of course, Dr. Elliot resorts to the use of chloroform in almost every case, and if the student or young practitioner desires to study the clinical administration of this remedy for this disease he will find in this book the most ample opportunity for doing so.

But the author places chloroform above venesection, and we are again obliged to join issue with him. We do it with the greatest diffidence, and will not think of placing any clinical experience we may have had against his, which has been very extensive indeed. Yet every one is most influenced by personal observation, and wherever that is lacking, the recorded cases of others and the general sense of the profession are the best guides to follow. Now, we may say of bloodletting nearly what we said of chloroform; the adherents of almost all doctrines and the advocates of almost all theories bear testimony to its value and make use of it in practice. Those who reject venesection entirely are very few in number, but we admit their names carry great weight; and the influence of their doctrines and their authority has tended powerfully in recent times to weaken confidence in this remedy, to diminish the frequency of its employment, and more than all, to modify the manner of its administration. But we will give all that is essential, said by Dr. Elliot upon this subject, that his position may be clearly understood:—

“We are tempted to use venesection in cases of puerperal eclampsia by the recommendations of authors, and of so many practitioners—by clinical traditions, in short—as well as by the appearances of great congestion observed in the head and face during the progress of the attacks. The purple, livid face and lips, and tongue; the congested conjunctivæ; and the duskiness of the skin which is often observed; suggest abstraction of blood as a measure of relief. If we analyze our apprehensions, however, we find that extravasation of blood upon the brain is what we chiefly dread; and if we examine the records of autopsies, we find that such a contingency is extremely infrequent, and probably associated in the majority of cases with fatty degeneration of the bloodvessels of that organ.

“Moreover, it may safely be said that a majority of the severe cases of eclampsia occur in patients who are anæmic, and whose subsequent histories display tendencies to hydræmia, and that a roborant treatment with iron is most generally indicated after the immediate dangers of the confinement shall have passed. It is obvious that copious abstraction of blood, during the progress of these attacks, must therefore unfavourably influence the future convalescence of many of these patients.

“Another and natural argument for venesection at the present day, may be found in the likelihood that it may remove some of the poisonous principles which are supposed to affect the nervous centres; but we may eliminate these by other channels, and meanwhile powerfully control their influence by chloroform until we shall have terminated the labour.

“Still, in patients of a plethoric habit, and more especially in cases where we suspect that atheromatous degeneration may be present, the moderate abstraction of blood may be a judicious practice, and not liable to do harm. But large and repeated bleedings do not seem to me to be indicated. Where there are evidences of anæmia, the abstraction of blood should be resorted to with the greatest hesitation.

“In a great majority of my cases blood has been taken, though rarely by venesection, and in moderate quantities. In most, wet cups have been used, a process applicable in various parts of the body, which adds the advantage of counter-irritation to the treatment, and measures accurately the amount of blood which is withdrawn, without the risk, so common in venesection, of taking more than is desired.” (pp. 75-76.)

Our comment upon the first paragraph of the above is that we cannot, however closely "we analyze our apprehensions," find that we bleed in eclampsia chiefly to prevent cerebral extravasation. To relieve tension of the bloodvessels; to obviate a congestion, primary as a feature of the disease, and secondary as a consequence of the fits; to profoundly modify the cerebral circulation—these are the reasons which would influence us to apply the remedy; although as a preventive of extravasation the remedy deserves confidence.

To the second, third, and fourth paragraphs we would say that to favour venesection does not necessarily imply favouring "copious abstraction of blood." A rational use of the remedy is the adaptation of it to the case in hand according to the symptoms and the powers of the patient. That while removal of blood undoubtedly "eliminates" poisonous principles, it can do so only to a limited degree; but it is useless to depend upon "other channels" for this when the very citadel of life is stormed, and its destruction threatened before the other channels can be made use of. By venesection we moderate the force of the disease if we do not cure it, and, as with chloroform, gain time, precious time, for the use of other means, and for the termination of the pregnancy, coincident with which, according to Braun, the convulsions will spontaneously terminate in thirty-seven per cent. of the cases.

But the author's abandonment of bloodletting has been progressive:—

"I find myself resorting less frequently to this practice even, or with less confidence in the abstraction of blood in each succeeding year."

It would be interesting to inquire whether this progressive change is the result of the recent doctrines, or from the observation and candid comparison of the result of his cases as formerly treated. Certainly the manner of his treating some cases ten or fifteen years ago suits us much better than his present plan. Take, for instance, Cases 27 and 32 as marked instances. We abridge them, for the benefit of those not having the work, and italicize for ourselves.

M. M.; age 17; primip.; *delicate looking*; convulsions, one of which lasted forty minutes; nothing said of labour pains; os dilatable, and about the size of a dime; face flushed; breathing stertorous; pupils contracted; pulse 160, hard, small, and incompressible. With *head and shoulders elevated, she was bled from a good-sized orifice to about twenty ounces*. Two and a half hours after, pulse 130; one hour after, pulse 115, full, soft, and compressible; pupils natural; no convulsions after bleeding. Recovery.

C. W.; age 30; primip.; Oct. 24, 1852; 3 P. M., found comatose after three convulsions; robust, plethoric temperament; full, hard pulse; v. s. $\bar{3}$ xij, *when consciousness returned*. At 6 P. M., fourth convulsion; *reopened the vein and took $\bar{3}$ xij more*. 8 P. M., fifth convulsion; chloroform. 9 P. M., delivered with forceps. 1 A. M., slight convulsion, the last. There is here an evident error in date, for the next entry is Oct. 22, when, her bowels having been moved by calomel, she was *cupped to $\bar{3}$ xij over lumbar regions*, apparently on account of pain on pressure over the kidneys. Steady improvement and recovery.

Now contrast this with Case 13, treated in 1866: Mrs. —; age and number of labour not given; had had during pregnancy *dimness of vision, seeing objects through a fog or mist; some disturbances of hearing*; on her way to bed, 9.45, was taken with a convulsion; at 11 P. M. a second, severe; no return of consciousness; bled to *six ounces*; patient *very strong*

and plethoric! Next day, 2 A. M., violent convulsion; labour pains; delivery by forceps; chloroform from 11.30 P. M. to 3.30 A. M., when another severe convulsion; bled to six ounces; cathartic; 7 A. M., convulsion. Died next day.

The author, then, from what we should term a rational bleeder, has become a timid one; certainly no one would maintain that, in a "very strong and plethoric" woman, the removal of six ounces of blood was sufficient to expect any benefit. Now, the "old masters" taught that everything depended upon the *manner* of this remedy; that the "*pleno rivo*," with elevated head, yielded results which could be obtained by no dribbling stream. We find no mention of this by the author, nor why he has abandoned it, any more than we find any record of the cases or statement of the facts upon which he has changed his practice, and changed it, we think, for the worse.

The truth is, the clinical testimony as to the efficacy of bloodletting is overwhelming; "theory and doctrine" aside, the records of "practice" furnish the most undoubted proof that in the great majority of cases venesection is the most reliable remedy, that it should come first, and the others should be subordinate and secondary as to time of application. Some of the strongest adherents of the toxæmic theory, as Cazeaux and Tyler Smith, advise it almost as strongly as do those who hold other views of the pathology of the disease.¹

There is another application of venesection which we do not find recommended in this work. We allude to it as a preventive of the convulsive attack. The author tells us (p. 6) that the greatest advantage gained from our recent increase of knowledge has been in prophylaxis. We doubt it much, if the result is to banish bloodletting from the treatment of the threatening symptoms presented by some of the cases in this book. Take, for instance, Case 31, abridged, of course:—

M. C., 24, primip., a large, stout, plethoric woman; *headache during pregnancy*. Feb. 14th, midnight, pains strong, and *she fancied that she saw men standing about her*. 15th, 4 A. M.; pains strong; *complained that she could not see*. At 5 A. M., convulsion; 6 A. M., ditto; 8 A. M., another, and at 9 another, when Dr. Elliot came and did as any other sensible practitioner would have done, bled her, when the pulse fell to 80; its former rate not stated.

Now we do not find here one word of comment or of remark as to anticipating the outburst of convulsion which was so plainly foreshadowed. Surely no clinical teacher could desire a better case or a better opportunity for teaching his inexperienced readers how to read and understand the signs of the coming storm, and in what shape to put the craft under their care so as best to meet and weather it. Educated to believe that such symptoms demand prompt bleeding, and having met with nothing in practice to shake that belief; having been educated, too, to believe that "it is far better to ward off than to cure an attack of puerperal convulsions,"

¹ For striking instances of the happy effect of venesection, we refer the student to Clinical Midwifery, by F. H. Ramsbotham, *Medical Times and Gazette*, Feb. 14, 1863. The cases are not selected or given to sustain any theory, but are all that occurred to the author during four months; and although this was in 1840, no intimation is given that, at the time of publication, the author had changed his views or his practice.

Also to an interesting paper, with cases, by Arthur Scott Donkin, M. D. Edin., etc.; same journal, Feb. 23, 1867.

we could not let such dereliction of duty pass unopposed against however high the authority we may call in question.

We have alluded to the fact that some authorities exclude venesection altogether from the treatment of eclampsia. Braun¹ is the leader of this school; yet he admits that it is not injurious in some exceptional cases. Trousseau has been quoted as an opponent of the measure, but the subject is but briefly considered by him, and his rejection of bloodletting refers to the use of it for cerebral congestion and extravasation only, conditions which he considers as effects and not causes of the convulsions.² The later writers upon this side of the question are Joulin,³ who follows Trousseau; and Tanner.⁴ On the other hand, we have one of the "old school" of repeated and extreme bleeders in Depaul, and we regret that we cannot just at this time obtain access to his arguments and statistics. It is curious, too, and worthy of note, that while the latest English writer, Tanner, rejects venesection *in toto*, the latest German authority appeals to the superior results of the bold bleeding of the English as proofs to his countrymen of the efficacy of the remedy.⁵

In the induction of labour and in hastening its termination for eclampsia, the author of this work belongs to an extreme school. Extreme, not in the sense that he would always penetrate an undilated os by manual force, and at all hazards, or if this were impossible, incise it, but extreme to the extent that he would resort to artificial means to effect delivery at the earliest possible moment as a means of treating the convulsions. He does not limit instrumental and manual interference to a condition of actual labour with dilated os, but resorts to means of dilatation, and would act previous to the beginning of labour, even for "threatening symptoms" any time after the child was viable. We will let him speak for himself:—

"My experience leads me steadily to look more favourably on the induction of premature labour, in cases where repeated examinations of the urine show that the conditions of disease are persistent, or progressing despite treatment; where some of the prodromata of eclampsia—the first mutterings of the coming storm—are present; and where the fœtus is fully viable. In cases where the fœtus is not viable, we must wait until the mother's life is actually endangered by successive attacks of eclampsia, or for other conditions recognizable in consultation, which lead irresistibly to the clinical conviction that either the pregnancy or the woman's life must be terminated." (p. 39.)

The first portion of this paragraph contains very extreme doctrine. We think few practitioners would resort to such a measure as the induction of premature labour for "the first mutterings of the coming storm." But

¹ The Uræmic Convulsions of Pregnancy, etc., p. 149. New York, 1858.

² Clinique Médicale, ii. p. 142.

³ Op. cit., p. 1148.

⁴ On the Signs and Symptoms of Pregnancy, p. 435. Phila., 1868.

⁵ Nægele's Lehrbuch der Geburtshülfe. 6ste Auflage. Von Dr. Woldemar Ludwig Grenser, Prof. der Geburtshülfe, Director des Entbindungs-instituts zu Dresden, etc. etc. Mainz, 1867.

"The beneficial effect of suitable bloodletting in the majority of cases of eclampsia is so evident from thousandfold repeated experience, that the objections advanced against it, in modern times, scarcely deserve to be taken into consideration. We refer, for instance, to the extraordinary favourable results which the English can present, and it is they who take blood in eclampsia in quantities so enormous that German physicians will never venture to reach." (p. 674.)

These are the results he refers to:—

"According to Merriman there were lost only 8 mothers out of 36 cases; Churchill 42 out of 152; Lever 44 out of 166; Collins 5 out of 30; Ramsbotham 7 out of 43." (p. 664.)

the author's practice is in accordance with his theory, even if it does not go beyond it. We refer the reader to Case 17 as an example; we are utterly unable to find any serious threatenings of danger, anything justifying interference with the progress of gestation, nor do the four reasons for the interference given on page 49 convince us that it was justifiable.¹ It is to be noted that the first is, "the child was fully viable and living;" yet it was lost! So we are prompted to inquire if another paragraph on p. 39 has, probably, any reference to similar cases?

"Unless the decision be arrived at on account of existing eclampsia or other serious contingency, if the result be not satisfactory, hostile criticism will not be withheld. And if it be satisfactory, and both lives be saved, it may be suggested that the operation was unnecessary, meddlesome, and hazardous. Such is the world."

And such it ought to be! is the only response we can make, in reference to operations undertaken with so little justification as this in Case 17. We would not be too severe, yet we cannot help feeling that some warning ought to be uttered against such doctrines, especially in a book designed for the guidance of the inexperienced practitioner.

Dr. Elliot has detailed some most interesting cases of puerperal convulsions; we recognize the value of his original researches as to the frequency of albuminuria given on page 10, but we have been much disappointed in his treatment of the subject, especially in the want of a clear statement of his views upon important points, and we are unable to coincide with the majority of his therapeutic measures for this important disease.

We pass on to a consideration of the induction of labour and the methods of dilating the os and cervix uteri, treated of in Chapter VI. They are subjects which stand in direct connection with the one just concluded. The connection may not be apparent; the explanation is this: within very recent times great addition has been made to our powers in these respects, and the processes are now brought about more certainly, and by means more nearly resembling nature, and consequently less irritating, than were heretofore in our possession. The great objection to hastening labour in eclampsia, a danger of causing a return of or increasing the violence of the convulsions is therefore in great degree abrogated, and although, as has been seen, we think Dr. Elliot goes further in this direction than but few of the profession would like to follow him, this may be pleaded in his justification that he uses means unknown until recently and as to the superiority of which over those formerly used there cannot be a question. It is not alone, of course, for eclampsia that induction of labour and hastening of dilatation come into use; for a rigid and unyielding os in ordinary labour, for cases of a contracted pelvis, and in ante-partum hemorrhage it is frequently required. Cases of all these conditions are given and the treatment detailed, making this part of the book one of its most interesting and useful portions, and the student who would make himself acquainted with the means at our command, for inducing and hastening labour, should study it carefully.

The use of sponge-tents and manual dilatation of the os need not detain us, as their use has long been known. The additions to our resources,

¹ Neither do the facts and fortunate termination to mother and child of Case 70, given in connection with another subject, convince us that this is good practice. Labour here was induced "to spare the dangers and delays of the last month of pregnancy" in a patient who had had eclampsia and was suffering from hemiplegia and choreic convulsions.

which we have alluded to, are the uterine douche and Barnes' dilators. They are efficient means, and generally believed to be safe, and being of recent introduction to professional notice, we will quote pretty freely from Dr. Elliot in regard to both of them.

"The douche is always attainable, always serviceable, very often entirely efficient in itself; never painful or dangerous, when properly used, in cases where there are no conditions which prevent the risk of fatigue, delay, and some exposure, which its use demands."

"The douche cannot be used effectually unless the stream be directed steadily against and within the inner rim of the os uteri. A vaginal douche would be too uncertain in its action. * * * In directing the stream against the os, it is to be remembered that an accumulation within the uterus is liable to change the position of the child, or, perhaps, to develop serious dangers for the mother. * * * I prefer always to use water of a temperature most agreeable to the patient, and to inject one or two gallons at once with an ordinary Davidson's syringe, taking care to keep the point of the forefinger constantly a little in advance of the nozzle, so as to appreciate the direction of the stream. * * * Used in the manner in which I have recommended, with the patient on her back, as we place her for forceps, I have never met with any evil results from its use. It has failed me; it has demanded frequent repetitions and delay, but it has proved harmless to mother and child; and I would no more dread to use it with such precautions, than an ordinary vaginal injection." (pp. 158-9.)

"It is interesting to note the closeness with which the phenomena presented simulate those of the most fortunate labour. First, relaxation of the soft parts, with increased secretion; the os then softens, relaxes, and dilates, when the pouch of membranes passes intact into the vagina. The first stage of labour may be said to be accomplished with the least possible inconvenience, and the patient saved in great measure from its attendant sufferings; which are probably productive of more annoyance and anxiety than the severer expulsive efforts which promise speedy relief to the burden." (p. 161.)

We believe we have correctly stated the general belief to be in favour of the entire absence of danger from this measure, and the author's testimony is strong upon this point. Yet, unhappily, there have been fatal accidents accompanying it, numerous enough to place its safety somewhat below the estimate of Dr. Elliot. Thus Joulin says, the uterine douche has caused the death of the mother in at least three cases in France; that Simpson has met with a fatal case, Lazette with two, and that in a collection of thirty-six cases of this kind, complicated with accident, twelve women have succumbed.¹

Dr. Elliot does not tell us anything as to how frequently the douche fails. In eighty-one cases quoted by Stoltz from Krause, it succeeded alone in sixty-eight; in thirteen, other accessory or more powerful means were required. Twenty-nine children were born living, twenty-six dead.²

Barnes' dilators have not been long enough in existence for the profession generally in this country to know what they are. They have not yet found their way into the text-books, or into the hands of the general practitioner. Dr. Elliot claims credit for having been among the first, if not the first to use these instruments, as well as the douche, and we cheerfully accord it to him. His book, too, will be the means of bringing them into notice, and spreading their use here. Under these circumstances, we think, a description of them was not only desirable, but its omission a great mistake. It is impossible that every reader into whose hands this book comes will know all about them, or that he has only to go around the corner to

¹ Op. cit., p. 1111.

² Nouveau Dictionnaire; Art. Accouchement prématuré artificiel.

an instrument dealers to supply his lacking knowledge. It would have taken brief space to have said that they consist of a set of India-rubber bags of different sizes, to be introduced within the os, and injected with water, being so shaped as to retain their position until dilatation is effected. As to their employment and advantages, the author says:—

"These can always be employed with facility where two fingers can pass into the os, and are susceptible, in favourable cases, of earlier use.¹ They are, perhaps, more widely useful than the douche, and are applicable in cases of hemorrhage, jactitation, and insubordination, where the douche cannot be used. They are more certain, and can be relied on beyond any other measure to rapidly dilate the cervix, and allow the confident anticipation of a very rapid operative delivery within a few hours. They combine facility of introduction, facility of retention, hydrostatic pressure, application of heat or cold, compatibility with frequent vaginal examinations, with comparative safety against internal uterine hemorrhage." (p. 170.)

"Barnes' dilators are so valuable that we cannot escape the conviction that no man is fully prepared for the contingencies which attend the induction of labour and rapid dilatation of the cervix uteri, who is unprovided with this, or a similar instrument. The dilatation of the cervix, by fluid pressure applied from below, has taken rank in midwifery as a fixed and trusty procedure, based on the closest imitation of nature's laws, and the names of Arnot, Keiller, Jardine, Murray, the younger Storer, St. Tarnier, and Barnes are indissolubly connected therewith. But the great merit of making the method popular and practicable rests with Dr. Barnes of London, who has the same relations to this procedure that Morton bears to the introduction of ether as an anæsthetic. It is greatly to the credit of the learned and indefatigable Dr. Barnes, that he presents both his claims and the method so frankly, modestly, and completely." (p. 174.)

We need scarcely say that the cases fully illustrate the value of this admirable invention and deserve careful study on the part of the young accoucheur.

The author makes no mention of some other standard remedies for a rigid os. Venesection and tartar emetic we can well spare; they are supplanted by chloroform, and we are surprised at finding no mention of the power of this anæsthetic in promoting relaxation of the os, especially as the author uses it freely. It sometimes acts admirably, as has been attested by numerous and most reliable witnesses. We should have been glad, too, to have seen an expression of opinion as to the reliability of belladonna in this respect; its powers are questioned by the highest authority, and as we are entirely sceptical ourselves, we should like to know how the author's clinical experience bears upon the question.

The os being dilated, the contractile powers of the uterus need sometimes to be excited. As such exciters, the douche and Barnes' dilators act powerfully as well as dilators, but other measures are sometimes necessary to bring on expulsive pains. These Dr. Elliot considers next, *seriatim*, giving illustrative cases.

The introduction and retention of a catheter between the membranes and the uterus comes first in order, a measure for which we are indebted to Krause, of Dorpat, although the way was broken by Lehmann and Zuydhoeck, of Amsterdam, who did not allow the instrument to remain.

"Although theoretically a harsh procedure, it does not appear to increase risks of metritis; and is very effectual when left in situ." (p. 186.)

¹ Dr. Barnes says, an os uteri that will admit one finger will admit a No. 2 dilator.

Separation of the membranes may be made "with advantage," which is about all that requires to be said of the measure.

We find some interesting testimony as to the efficacy of galvanism and electricity in exciting uterine contraction. They have not won the confidence of the author; they have failed in his hands, too, as emmenagogue and lactagogue. In two cases we faithfully tried the interrupted electromagnetic current to promote the secretion of milk, and did not observe the slightest effect.

"It seems to me that there is too great a tendency in medical journals to parade a few cases in which the menses, or the secretion of milk, followed the use of the current, rather than to examine the question dispassionately, and on a large scale. I have made careful trials, with Kidder's best instrument, on hospital patients observed by the class, without success, and I have used the same instrument very thoroughly and very often in private practice without other satisfaction than that of having made the effort. Even in the cases adduced by the best authorities, the number is too few to enable us to feel certain that coincidences are not reported as results." (p. 191.)

In regard to puncture of the membranes as a means of hastening labour, the author gives some excellent advice against the measure. As he will never be convicted of ultra-conservatism in regard to operative procedures; we think the young practitioner may rely upon his advice as being sound and worthy of remembrance:—

"There are few rules more worthy of being impressed on the mind of the young obstetrician than the desirability of preserving the integrity of the membranes until the cervix uteri is fully dilated or dilatable; and until both the position of the child and its relations to the maternal organs are such as to promise a natural or permit a speedy delivery." (p. 193.)

This is what the author says of ergot, the only medical means worthy any consideration.

"Ergot is too uncertain in cases where uterine contractions have not commenced; when efficient, it increases the risk to the child. As an agent for strengthening *existing* contractions, and rendering them more frequent, its claims are paramount. Still, with the exception of those cases, in which flooding may be apprehended; and those in which the delay can be attributed to no other cause than deficient expulsive force, while the head or breech is yet very high in the pelvis; or of those in which the vagina and perineum are so rigid as to be specially liable to laceration from instruments—in those cases of delayed labour, in short, in which the forceps can readily be used and the choice lies between them and ergot, my personal preference would be for the forceps; though my long observation of the use of forceps in inexperienced hands, would incline me to recommend the use of ergot to the beginner." (p. 194.)

That ergot increases the risk to the child is everywhere acknowledged by authorities, and cannot be too strongly impressed upon the mind of the young practitioner; we believe that it does more than increase the risk; it *insures its loss* if delivery does not speedily follow upon the exercise of the powers of the medicine; squeezed by the tetanic contractions of the uterus as in a vice, it perishes from interference with its blood-purification as directly as if a string were tied around its umbilical cord. Long ago we learned the lesson which Dr. Elliot says he learned from Case 78; yet he resorts to this medicine very frequently; what he *says* we have given above; what he *does* must be gathered from a perusal of his book not only in this section, but all through it. We think the frequency with which he resorts to ergot and the period of labour at which he sometimes administers it will excite the attention of any careful reader, and especially when

it is considered that it is by one who from large experience has gained familiarity with the forceps and who resorts to them without hesitation. A little farther along we find the following sentence :—

“ Again, the ergot has acted delightfully and with great power, but has afterward proved a serious obstacle to the removal of an adherent placenta, a condition which can never be diagnosticated in advance.”

We believe that the administration of ergot very frequently occasions serious difficulty in the removal of a *non-adherent* placenta. It does so by inducing irregular contraction of the uterine fibres, producing the so-called “hour-glass contraction.” Our experience may have been very singular, undoubtedly it has been limited, but the effect has followed the administration of the remedy so generally, and so certainly, that it has forced itself upon our attention and we could not escape modifying our practice accordingly.¹

Entertaining such views then as to the action of ergot, having long since become a convert to the soundness and wisdom of the teaching of one of our leading American obstetrical authorities—“*never give ergot as an expulsive remedy*”—we must protest against the recommendation given above to the beginner to use ergot instead of the forceps.

Dr. Elliot must have seen some very bad cases of mischief from forceps if he has seen worse than has fallen under our observation from ergot. The trouble is that students in this country have not opportunity to learn the use of instruments; they are not so generally exercised on the *phantome* as in European schools; clinical observation of their use is not enjoyed, and under these circumstances it is not surprising that there are bungling and mischief. But let the young man study his instruments and the intention of them; let him exercise himself in their use, as he does with his surgical instruments, and he will find the difficulties to be overcome, and skill no harder to acquire, with the one than with another. Then he can bring to the assistance of his parturient patient instead of an agent which most atrociously increases her agonies and almost certainly destroys one of the lives confided to his care, an instrument with which he can speedily terminate her labour without increasing the danger; instead of setting in motion a train of action over which he has no further control however disastrous may be its progress, he uses an agent which never becomes his master, and is always under the control of the brain that directs it. In enunciating such views as these we anticipate the quotation: “*Meddlesome midwifery is bad!*” When we give in our allegiance to that often-heard and often-misapplied axiom we shall extend it to *medicines* as well as to *instruments* and begin by advocating its inscription upon the ergot bottle of every practitioner in the land.²

¹ Churchill alludes to this effect of ergot.

² We cannot avoid quoting one of the latest, as it is one of the highest authorities, upon this subject :—

“ When you have given ergot you are likely to be in the position of Frankenstein. You have evoked a power which you cannot control. Ergotism, like strychnism, will run its course. If it acts too long, or too intensely, you cannot help it. The ergotic contraction of the uterus, when characteristically developed, resembles tetanus. Then woe to the mother if the cervix does not yield, if the pelvis is narrowed, if, in short, any obstacle should delay the passage of the child. And woe to the child itself if it be not quickly born. I very much prefer to use weapons that obey me, that will do as much, or even less, than I wish. I fear to use weapons that will do more.”—Barnes, Lectures on Obstetric Operations, *Medical Times and Gazette*, November 30th, 1867.

In Chapters IX. and X. under the head of "Obstetric Operations in deformed Pelves," the application of the forceps is considered, a subject which is second to no other either in regard to the requirements of daily practice, the mutations in professional favour which this instrument has experienced, or the practical questions in regard to it which are yet under discussion. A thorough acquaintance with the instrument and its uses is becoming more and more a matter of necessity to the practitioner:—

"Dewees states that he only met three cases of pelvic deformity during his long and brilliant career, and there are many excellent practitioners in our country, in large practice, with a similar experience. Indeed, it is true, that the American women are exempt, as a rule, from these deformities. Still, the tide of immigration bears with it the same varieties of pelves which are described in the works of German, French, and other authors; while the increasing size of our cities and manufacturing towns, and the difficulties of obtaining a bare subsistence without continuous labour in unhealthy localities are producing the same results here which have been so long and so well known elsewhere." (p. 252.)

But it is not alone for deformed pelvis that the instrument is required. There are various elements of labour which may produce difficulty and call for instrumental assistance even when the pelvis is normal, and thus occasion the widest variations between different labours in the same woman. There are some excellent remarks in this connection, by the author, and they deserve to be repeated because the fact is not as generally known as it deserves to be. When a woman has been delivered once or twice with instruments and then has a speedy and unaided delivery, or when one who has needed no assistance for several children and requires it at another time, it too often gives rise to favourable or unfavourable comments upon the practitioner, when neither was deserved.

"The difference in the size of a child in different pregnancies is not only felt in the range from four pounds to twelve, and in the probability of increased size in ratio to the number of pregnancy, but a material influence is exerted by the different size of the head of two children weighing alike, as well as in fortunate adaptations to special requirements. Thorough flexion in one case as compared with imperfect flexion in another; accurate dip of the head in one case instead of an oblique direction; fortunate correspondence of the head to that diameter which may be roomier than the other; varying expulsive forces; differences in the ossification and capabilities for moulding of the head, with many other influences, affect the results of different labours." (pp. 253-4.)

As to the particular forceps to be preferred, the author does not express an opinion; he has used "some fourteen different styles," and has introduced one to the profession with some modifications so that there is an instrument known by his name. No description of his own instrument is given, although it is repeatedly referred to, an omission which, we think, is to be regretted, because readers will be puzzled all through the book by reading of "the pivot"—"the pivot in the second hole"—and only learn towards its close that it is a pin sliding between the handles to prevent their approximation and thus obviate too great pressure upon the head. Having, fortunately, seen the author's instrument we escaped this perplexity. No claim of originality is made for this instrument upon the approximation of the handles, and we presume Dr. Elliot to be too well read in the history of his speciality to make any such claim. It affords but another instance of the truth of the saying that "an ancient name can be found for every modern modification of the forceps," for the princi-

ple has been applied, and the end attained by various means, over and over again, by Petit, Aitken, Evans, von Froriep, Uthhoff, Ulende, and others.¹

The following are his characteristics of a good instrument :—

“It should take up as little room as is consistent with strength, and its uses; it should afford every opportunity for powerful traction, without risking compression, until compression should be demonstrated to be unavoidable; it should have such a pelvic curve as may enable the operator to convert occipito and mento-posterior positions into anterior positions, provided no other conditions prevent; it should have no edges liable to project unduly and risk the laceration or cutting of maternal tissues.” (p. 302.)

He is much in favour of a narrow blade :—

“It is very desirable that forceps should occupy as little space as possible. In very many cases a slender and narrow blade can be readily or cautiously passed, where but a fractional increase of size might render the application impossible. Hence that instrument will have the widest range of usefulness which takes up as little room as is consistent with strength and the requisites for the head curve. All sharp edges are hazardous, and the extreme breadth from one outer edge to the other of each blade should taper gradually toward the handle, and not describe the bold convexity of Davis's and similar forceps. When the head is seized in the bi-parietal diameter nicely and satisfactorily, as pictured by Meigs in his work, that instrument is perfectly adapted to the average head, and neither the breadth of its blades nor the convexity alluded to is objectionable. But we have seen that this application is impossible in all but the simplest cases; and when the head is seized in its oblique diameters, or the instrument cannot be advanced so as to grasp the whole head thoroughly, then the edge of one or of each blade may be free and liable to cut the vagina or the perineum.” (pp. 301-2.)

From these views, and from the statement that “it is impossible to devise a forceps which can be the best instrument for every case,” we suppose the author would concur with those who believe that the “hand” is of more importance than the “instrument,” and that he would agree with the proposition of Jonlin, that as “there is no bad forceps for the skilful and experienced practitioner, there is no good one for him who does not know how to use it.”

We can add our testimony to the necessity of the purchaser watching the instrument-maker :—

“Very much depends on the way in which the instrument-maker tempers the metal and follows the model. This is so often neglected, that every man who has devised an instrument must have seen specimens for which he would regret to be responsible.” (p. 303.)

Not very long since, being desirous of obtaining Simpson's forceps, we wrote to an eastern maker to inquire if we could obtain it from him, made accurately after the description in Simpson's works. Receiving an affirmative answer, we ordered one, and got an instrument in which the tips of the blades come very nearly three-fourths of an inch nearer together, when the handles are closed, than they should; and whereas Simpson claims it as a distinctive feature of the lock proposed by him that it be loose, so as to allow of lateral motion and overlapping to a considerable degree, “thus facilitating their introduction and application,” in the pair we received the

¹ *Researches on Operative Midwifery.* By Fleetwood Churchill. Dublin, 1841, plate viii., fig. 1; plate ix., figs. 3, 4, 5.

Abbildungen aus der Gesammtgebiete der theoretisch-practischen Geburtshülfe. Ed. Casp. Jac. Von Siebold. Berlin, 1835. Taf. lxi., lxii., lxvii., lxix., lxxii. And pp. 269, 272, 289, of the text.

lock fits with the most perfect accuracy. We have also a pair of Hodge's forceps, made by a western maker, which varies full half an inch in some of the most important measurements from those given by the originator, and which are nearly two ounces under weight, thus decreasing the thickness of the blades and sharpening their edges.

In regard to the manner of using the instrument, although there are no specific directions as to its application in different positions of the head, we find some good remarks for the benefit of the inexperienced operators :—

"There is another tendency against which beginners must be warned, viz., an exaggeration of the side-to-side movement in traction. We are taught that forceps advance the head by direct traction, and by a double lever side-to-side movement. And so they do. There is also once in a while an advantage in starting a head by moving the handles a little up and down before drawing upon them. But I have known more than one instance in which the fulcrum has been made of the descending rami, and the tissues on each side have been cut by pressure of the instrument. Vaginal, not perineal lacerations from forceps are more liable to occur than is generally known, and nothing marks the experienced operator more than his care to avoid these lesions." (p. 307.)

We are glad to find that the author here recognizes the true point and source of danger; that it is not in the injuries which may be inflicted by the movement of the points of the instrument, as has been stated by some writers, but lies in a veritable trituration of the maternal tissues which are crushed by the action of a lever, the power of which is readily seen to be immense when the length of its long arm is compared with that of the short. There is no doubt that in proportion as the forceps is used simply as a tractor it is harmless, and in proportion as the properties of a compressor and a lever are given to it the danger will increase, and care and judgment be demanded in its use. Next to this will a thorough understanding of the mechanism of labour and of the case in hand insure safety even when the difficulties to be overcome are very great :—

"There are few facts which impress the beginner more powerfully than the tractive force which can be advantageously and properly used in difficult forceps cases. An inexperienced man, not certain that he has grasped the head properly and firmly—not certain that his tractions are made in the proper axis—not sure that he is delivering in obedience to the laws of the mechanism of labour—and not certain that he could stop his tractions instantly at the first commencement of slipping—has no right to put so much force on the instrument.

"But the man alive to all these indications—sure of the position of his blades, and of the necessity for great force—pulling only with his arms, and not with his back, and wide awake all the time—may find that just such tractions are the only ones which can terminate a labour without recourse to embryotomy; and that just such tractions, repeated again if necessary, may alone justify the subsequent resort to embryotomy." (pp. 305-6.)

Dr. Elliot is in favour of the application of the forceps at the brim, and the book contains many instances of its passage within the undilated os; yet he fully recognizes the increased difficulties and risks :—

"This operation is always difficult, always involves risks to the mother and to the child, and demands the greatest skill and caution. It may be an operation of necessity when the head cannot be pushed back in the uterus so as to admit of version, and the child be living; it may be an operation of election when the head is readily movable, or when the child is certainly dead."

* * * "While this additional risk is a motive for deferring this operation in many cases, it offers no justification whatever for deferring it too long, or for resorting to any deadly operation until both forceps, and version, and time, and all other methods, have been tried, and perhaps tried again." (p. 278.)

The space through which delivery can be effected with the forceps is placed somewhat lower by the author than by some authorities: "under favourable circumstances when the conjugate measures only three inches."

There are two points connected with the use of the forceps at the brim of the pelvis which we wish Dr. Elliot had noticed, or in regard to which he had been more explicit. The first is as to the manner of their introduction at the brim; as to whether the head of the child or the sides of the pelvis shall be the guides. On pages 298 and 300 he says something upon this point, but not all we could wish. He says, "The head is always seized obliquely—from one brow to behind the opposite ear;" Cazeaux says it will "generally" be thus caught from the necessities of introduction. In the vast majority of cases of arrest at the brim, the shortening being in the conjugate, the head will be directly transverse, and in most of these cases it will be impossible, at least for those of ordinary skill, to seize it other than with one blade over the brow and the other over the occiput. The objection that the pressure upon these parts of the head increases the diameter in which the arrest is made has been shown to be more theoretical than practical, and the instrument generally surmounts the difficulty simply as a tractor. The more serious objection of increased danger to the child is shown by Hodge¹ not to be so great as has been maintained. But this plan of application is advised and taught by the greatest number of writers; the highest and latest authorities,² in applications of the forceps at the brim, disregard the head entirely and apply the instrument along the sides of the pelvis, removing them as the head descends in the pelvis and the turn is made, a procedure not always necessary, however. The most important bearing of the question is this: by teaching that at the brim the forceps should be applied in reference to the head the difficulties of their use is vastly increased, and the frequency of resort to them will be much limited with proportionate increase of other and worse means of delivery. So markedly has this been the case as to have produced eras in the history of the art; to the doctrines of Smellie in regard to the necessity of the application of the long-forceps over the sides of the head has been attributed the infrequent use of them in British practice, the unfortunate preference for the short instrument and consequent retrograde of the obstetrical art.³

The other point is in regard to the plan of applying the forceps early, when there is a contraction of the brim, and of using them as an assistance to the natural powers exerted over a considerable length of time. As the author has seen fit to warn against an injudicious application of force, we wish he had also warned against what we believe to be a common error, the idea that speedy delivery should follow the application of the forceps, and that he had called attention to the teaching of Hodge⁴ in this respect, which we believe to be a valuable modification of the application of the instrument, and as being American in origin, especially deserving attention in a work so fully devoted to the operative part of obstetrics.

Upon the question as to the relative merits of version and the forceps,

¹ System of Obstetrics, p. 401.

² We may especially mention the German writers Velpeau, Joulin, *op. cit.*; Barnes, *Med: Times and Gaz.*, 1867; and F. H. Ramsbotham, *Clinical Midwifery*, same journal, March, 1862.

³ See Joulin. Barnes, in his course of lectures now being published, says the obstetrics of his country has retrograded.

⁴ *Op. cit.*, pp. 403-4.

where there is contraction of the brim, and the child is living, a question upon which a vast amount of ingenuity and investigation have been expended, the author is inclined to favour the forceps, and gives expression to his opinion in an open, straight-forward way, which we should have been better pleased had he followed in regard to some other questions:—

“In one case I have delivered with version after I had failed with forceps; and while I have delivered successfully and satisfactorily by version in some cases—in others where I have tried version after failing with forceps, it has not been more successful. Examples of these results are scattered through the book, and some are subjoined.

“Every now and then we meet with recorded cases of version in deformed pelvis, where the results are so satisfactory that one feels as though they should establish the law for our interference. But, alas! few men are willing to print a frank statement of all their failures. Certainly, for my own part, despite my admiration for Sir James Simpson’s theory and argument, my own preferences are for forceps as an elective operation, though time and further observation may change my views. Still, my experience thus far, and the opportunities which I have enjoyed for witnessing the operation of others, strengthen my opinion.

“In a conjugate of three inches and upward, with a living child and a head presentation, my first choice would be for forceps. Between two and a half and three, if the child were living, I should perform version.” (pp. 348.)

It may require a bold man to differ with Simpson in regard to a disputed point in obstetrics, yet we believe the weight of authority to be with Dr. Elliot in this matter. Even Cazeaux would not turn “when the top of the head presents in a favourable position,” or not until “after several fruitless attempts with the forceps.” But, too frequently, in writing and speaking of this subject, Simpson is represented as the champion of version as compared with the forceps, while in reality it is as compared with craniotomy principally, and with forceps only secondarily, that he carries on the discussion. This may be especially seen in a contribution, written several years after the publication of his principal essay, in which he speaks of the advantages of version for cases in which the head cannot pass “by the unaided efforts of nature, *or even with the assistance of the long forceps*, if that instrument is had recourse to.”¹

But we consider that the author has failed to express himself plainly and decidedly upon the greatest and most interesting question connected with the use of the forceps. To confine the application of the instrument only to cases of deformed pelves, would be, in our opinion, sadly to limit the benefits it is capable of conferring. The most extreme views have been held as to the circumstances which render a resort to assistance in labour justifiable. In not very remote times it was taught that the head must have rested for six hours on the perineum before using the forceps; and even by respectable authority of our own day, the doctrine is laid down that we are not to interfere with the labour “until perfectly satisfied that the obstacle *cannot* be overcome by the natural powers with safety to the mother and child” (*Churchill*); and that to “deliver by the forceps merely to abbreviate a slow but natural labour, is highly improper” (*Murphy*, 2d ed.), and renders the operator especially reprehensible for any departure from ordinary convalescence which may follow. This school would wait until certain symptoms—as a frequent pulse, tender abdomen, a hot and dry vagina, betokened danger, before they would become more

¹ *Obstetric Works*, vol. i. p. 547. Philadelphia, 1855.

than passive spectators of the painful struggle. But there is a more modern, a more humane, and we believe a far larger school; its doctrines are that it is far better to anticipate danger than to wait until a morbid train of symptoms are set going, the cessation of which no one can foresee; that it is our duty to aid the powers of the women; and that, above all, her sufferings deserve consideration at our hands, and that it is our duty to abbreviate them whenever possible to do so with safety. Now, to which of these schools does Dr. Elliot belong? He expresses himself very moderately to the intent that the greatest danger is likely to be from delay; but he does not express himself very strongly in favour of interference. We will quote what he says upon the period for operating:—

"It is easier to lay down rules than to seize the fortunate clinical moment. After a man has seen enough of difficult midwifery to have anxiously watched in consultation for the fitting moment to have finally operated, and then to have regretted that he had not waited longer; and, on the other hand, when in like circumstances he has regretted that he did not operate before, he at last understands the perplexities of the question."

"I believe, however, that among practitioners competent and accustomed to perform obstetric operations, the chief tendency to evil results from delay, and trusting to the efforts of nature; an error to which they are inclined by a knowledge of the powers of nature, and a familiarity with the difficulties and the risks of operative midwifery.

"Practitioners not accustomed to perform obstetric operations, but well educated in the theory, are more liable to err in the opposite direction from exaggerating the necessities for operative interference, and from underrating its risks. Especially may this be true of those who have fortunately been successful in a limited field, and see no reason to anticipate other results. 'He jests at scars who never felt a wound.'

"In competent hands the operation had better always be performed too soon than a little too late."

There is just enough conservatism in this, we think, to render the inexperienced practitioner timid, and nothing to enlighten him as to the symptoms by which he shall judge as to the "proper time" for resorting to instruments. Would Dr. Elliot wait for the "olive-coloured discharge" from the vagina before operating?—we judge not; yet he does not take the opportunity presented by cases 98 and 99 to warn against too long reliance upon the powers of nature. But undoubtedly the wards of Bellevue Hospital do not present frequent examples of the class of cases in which we believe the forceps should be far more frequently used. They occur in the "better classes" of our cities, and the causes producing them are daily increasing, and the consequent increase of a necessity for instrumental aid in labour is far more strongly favoured by them than by the importation of deformed pelves from the old world. Luxurious and enervating habits weaken the bodies of our women, a faulty education and the frivolous pursuits of fashionable life render their nervous system unduly excitable, and illy fitted to bear the trials of parturition; the process is prolonged simply from want of power to exercise the auxiliary force under voluntary control, and if much prolonged the system experiences a shock from which it but slowly, if ever, struggles back to health. The experience of every practitioner will furnish numerous instances of this kind—cases in which the first stage has extended over twelve, fifteen, or twenty hours of severe suffering, perhaps the membranes having ruptured at the beginning of the labour. To this succeeds the second stage, which may not last very long, or be very severe before the patient's strength fails; the head has reached

the lower strait, but she is worn out and exhausted; hope deferred has made her heart sick, and exhortations to "courage," and assurances that she is "doing well," have become a hollow mockery to her ear; she can no longer bring to bear the expulsive powers of the abdominal muscles from fatigue, or she is restrained from doing so by pain occasioned by the pressure upon the floor of the pelvis, the last obstacle to be overcome. Thus matters may remain through long hours of suffering, and thus they are allowed to remain in the hands of those who teach the doctrines we have alluded to, balancing a final triumph of the powers of nature against utter exhaustion on the part of the mother, and the loss of the child. If we interfere, there is only the choice between ergot and the forceps. Of the former we need say nothing additional, and we look upon it as one of the most surprising instances of inconsistency that those who decry the use of the forceps in such cases are those who resort to ergot, against which so many well-grounded objections can be brought. But the application of the forceps in such cases is comparatively simple, and as devoid of risk as easy of execution; while, compared with the speedy relief it affords, no operation known to our art can compare with it. For such cases they are far more frequently required than to overcome the obstructions of a deformed pelvis. Cazeaux says nine times out of ten they are applied to overcome the resistance of the muscles of the perineum; and Barnes makes a similar statement. While, therefore, we would not go as far as a recent writer, and advocate the use of the instrument whenever "the second stage ceases to be actively progressive,"¹ we believe, as does Barnes, that we "are far from having utilized the powers of the instrument to the highest legitimate extent." As we would with anæsthetics spare the woman's nervous system by moderating her sufferings, so would we with the forceps, by shortening their duration.

Those who advocate more active assistance to women during parturition must always expect to meet the objections which always have been advanced against it. The most serious, of course, is mortality; this will be urged notwithstanding Simpson has so plainly shown that the mortality of both mother and child increases in a direct ratio with duration of the labour. Yet how especially difficult is it to obtain fair statistics as to forceps operations. They include the most difficult and the simplest cases; those in which the instrument has been used at the proper time, and those in which many hours of delay have already rendered the condition of the woman precarious. The fairest statistics would be those made up by men who resort to the instrument freely and extended over a large number of cases. These are at present lacking to any great extent.²

The question of mortality, too, has its double aspect, that of the alternative and severer operation which follows if the forceps are rejected or

¹ Arthur B. Steele, Lecturer on Midwifery, Liverpool Royal Infirmary School of Medicine, Braithwaite's Retros., Jan. 1868.

² Dr. Hamilton, of Falkirk, used the forceps ninety times out of 731 consecutive cases, or once in every eight cases, and out of the whole 731 cases not a child was lost.

Dr. Lawrence reports 1000 consecutive cases of labour. During the first 500, acting on the usual rule of delaying interference, he used the forceps eight times, or 1 in 62. Four of these children were born dead. During the second 500 he used them twenty times, or 1 in 25, none of the children being dead.—*On the Treatment of Tedious Labour in the Second Stage*. By J. Thorburn, M. D., Lecturer on Midwifery at the Manchester Royal School of Medicine. London, 1866. Pamphlet.

their application too long delayed; and although we are advocating their use in a class of cases little likely to require craniotomy, yet the fact that as the forceps have been neglected the use of the perforator has increased, has its bearing, and should be admitted into the pleadings. Thus we have the well-known table given by Simpson¹ which goes from Siebold with one forceps delivery to every seven cases, and one craniotomy in 2093; to Madame Lachapelle with forceps once in 293 cases, and craniotomy once in 1854; to Collins with one forceps delivery in 617 cases, and craniotomy once in 141. He carried reliance upon nature to the extreme, and the results are patent! Yet this table, despite the high authority from which it emanates, does not give truly the other end of the scale. Fr. B. Osiander, during thirty years' administration of the Göttingen Lying-in Asylum, used the forceps once in every 2.5 cases; yet he only used the perforator once in his life! How many labours he attended we cannot say, but the deliveries in the institution alluded to numbered 2540.²

In regard to the other serious objection to operative interference with labour, that lesions may be produced by an unskilful use of the instruments, we shall borrow Dr. Thorburn's reply, that we have no more right to debar suffering woman from the advantages to be derived from instruments on the ground that they may be clumsily employed, than the surgeon has to counsel the utmost delay in hernia, because a bungler might wound the bowel. But the truth is, authority is almost unanimous that it is the prolonged pressure of the child's head which produces sloughing of the maternal tissues and fistulæ, and not the use of instruments. This has been shown by Simpson, and Beatty, and Hodge, and Cazeaux, and numerous others. We may add to their testimony here that of Baker Brown, who, before the British Medical Association, said that "out of about 100 cases of lesions following labour, 90 per cent. were attributable to protracted labour. The idea that they were produced by the use of instruments was a farce and a bugbear."³ Joulin states that he availed himself of the ample experience of Jobert for the solution of this question, and had access to an inedited manuscript containing the statistics of 150 cases; the opinion of that eminent surgeon was decidedly that "fistulæ are *always* the consequence of too prolonged labour, and *never* result from an early application of the forceps."⁴ In our own country, out of 250 cases given by Dr. Emmet, not more than three cases resulted from instrumental delivery, and "these were cases of malpractice, and of no value in a statistical point of view;" all the rest were from delayed labour.⁵ Now, if there be a question in medicine which may be considered settled, surely it is this; it was only reconsidered here because of the pertinacity with which the objection is advanced by those who are opposed to operative interference with labour except as a dire necessity.

Were the doctrines we have advanced in regard to an earlier and more frequent resort to the forceps, and in regard to their use as a means of saving suffering, the expression of individual opinion only, they would deserve little consideration. But we believe they are the expression of a phase of professional opinion; that the tendency to reaction against the

¹ Obstetric Works, vol. i. p. 755.

² Versuch einer Geschichte der Geburtshülfe. Von Ed. Casp. Jac. von Siebold. II Band, pp. 601-604.

³ Med. Times and Gaz., Sept. 1, 1866.

⁴ Op. cit., p. 1570.

⁵ Amer. Journ. of the Med. Sciences, Oct. 1867.

doctrines of fifty years ago is strong; that it is marked even in Great Britain,¹ the peculiar territory of the let-alone doctrine, the country which gave to the world the forceps, and has furnished the strongest example of the extent to which they can be neglected; and that in this country, where a greater predilection for instrumental assistance has always been shown, there is at the present time a decided feeling in favour of an earlier resort to it. It is for these reasons we regret that Dr. Elliot's work contains nothing upon this matter, no admonition to the young practitioner that to minister to suffering is second only to the great mission of his life; or, on the other hand, no counsel to stay his hand for fear of the mischief he may do. The author, we doubt not, will contribute to the current by the recital of so many cases in which he resorted to the forceps; but he does not note its direction, its strength, or the probable duration of its flow.

There are other most interesting parts of this work to which we would willingly devote some attention, but we have considered subjects enough and made extracts sufficient to enable our readers to judge of its aim, character, and of the manner in which the author has executed his task. Its chief fault is a want of clearness of statement and decided expression of opinion as to unsettled points in practice, and a want of methodical arrangement and system, which is often annoying and sometimes confusing. We are aware that it is a collection made up from journal articles, clinical lectures, and the note-book; yet this will scarcely excuse such an instance as Chapter III., in which, after a page and a half devoted to the subject-matter, are interpolated ten or twelve pages of cases and remarks entirely foreign to it. But the work has great merits, and those which will outweigh the faults. There is an air of truthfulness and candour in the relation of cases which inspires confidence; there is that absence of any attempt to warp facts, or place them in special lights, so as to sustain pet theories, which marks the man of scientific training; there is a fair record of the unsuccessful as well as of the successful ones, so that the lessons of defeat may be learned from its pages as well as the lessons of victory. The young practitioner will find it a mine of clinical instruction, and one that, if faithfully worked, will yield him rich returns.

Whatever faults there may be in the work, can be easily corrected; as to whatever doctrines there may be not in accordance with the general view or with our own notions, we would not hint at a change; honest convictions derived from clinical observation are worthy of respect, and demand the highest consideration. But we trust the opportunity for improvement by a second edition may speedily be afforded to the author. If he will then remember that a single city, although a metropolis, is not the whole country; if he will forget the limited circle which listens to his oral teachings, and address himself to that wider audience which is scattered over a continent; if he will make his book something more of a treatise, and nothing less of a clinical record—he will erect to his name a monument more enduring and more honourable than any obelisk, and add to the medical literature of his country a work of sterling merit.

J. C. R.

¹ As an instance, we may mention that in the table of operations already alluded to, Simpson's forceps cases were stated as 1 in 472; this was in 1846. In 1866 he stated that they would amount to 1 in 15 or 20.—*Dr. Thorburn's pamphlet.*

ART. XV. — *Mental Pathology and Therapeutics*. By W. GRIESINGER, M. D., Professor of Clinical Medicine and of Mental Science in the University of Berlin, &c. Translated from the German (second edition), by C. LOCKHART ROBERTSON, M. D., Cantab. Medical Superintendent of the Sussex Lunatic Asylum, and JAMES RUTHERFORD, M. D., Edin. 8vo. pp. 530. London: The new Sydenham Society, 1867.

THE author of this work lays no claim to that practical knowledge of insanity which is obtained by living among the insane, and thus observing the varying phases of their disease with a degree of accuracy and comprehensiveness that can be derived only from such experience. But he says that he once delivered lectures on medical psychology, in connection with his instruction in clinical medicine, generally, and admitted cases of mental disease into his clinique. It is by such means, he says, "that the proper idea, the purely medical, of mental disease, conjoined, however, with a knowledge of the morbid mental symptoms, can first receive that general extension, so very desirable, whereby mere asylum managers can no longer call themselves medical psychologists, whereby that fantastical bombast, sounding of the spiritual world, which is still sometimes apparent in psychological literature, will soon give way to temperate, clear, medical observation." We are not quite sure that we understand the full significance of this passage, but we gather from it that he has fallen upon a more excellent way of studying insanity than that which is pursued by superintendents of hospitals for the insane. We cannot allow this claim, but we are willing to admit that a sagacious, skilful observer may learn more of insanity from the few cases that may chance to come under his notice in ordinary practice, than one destitute of every qualification for observing, though constantly surrounded by hundreds of cases. We might even admit that Prof. Griesinger has written a book on insanity not without some merit, while fully believing that it would have been much better, had he enjoyed ampler advantages of observation than the chance practice of any physician can afford. He may be assured that no amount of skill, no degree of care and attention, can fully compensate for the want of those opportunities that are furnished by an establishment expressly devoted to the insane.

This book is marked—some parts of it especially—by that muddiness of thought and obscurity of expression so common, we are sorry to say it, in the writings of German savans, and which, with the English reader, at least, detracts very much from their merit. It would seem as if their very subjective methods of study often led them to believe their conclusions to be original, merely because they are clothed in vague and indefinite language. Accustomed as we long have been to the most precise use of terms in scientific investigations, we are inclined to distrust any claims to novelty that cannot be clearly and distinctly described. Language is a powerful aid to correct thought; and until this fact is fully and practically recognized by our German friends, they will have failed to take an important step in the path of scientific inquiry. Almost every page of the present work furnishes illustrations of their prevailing fault. The preliminary chapters, though confined to those elementary facts and principles found in every text-book and long associated with certain forms of words, are written in a style most puzzling and vexatious to the English reader. While reading them we

seem to be wandering in a sort of dream-land, unable to recognize the most familiar objects, and wondering what it can all mean. Who would imagine, at first sight, that an old, familiar truth is enveloped in the following cloud of words? "We see that all impressions occurring centripetally, through the senses, converge in the brain, are perceived, assimilated, and excite the mental faculties, and then give rise to new centrifugal acts, owing to the relation in which sense and mind stand to the actions of the motory system." p. 2. If the reader fails to get much light from the following paragraphs, it is not our fault, for we have copied them exactly as they stand; and we might quote a hundred more equally luminous.

"Empiricism must patiently await the time when the questions concerning the connection of the contents of the life of the human soul, with its forms, shall have become physiological instead of metaphysical problems. Meanwhile, would they but desist from the pursuit of unanswerable questions, from striving wildly in science, and from accusing each other of heresy by the mixing up of quite heterogeneous questions. Would the followers and fanatics of materialism but consider a point which appears to me not to have been hitherto sufficiently brought forward in the discussions of these questions. The elementary phenomena which occur in the nerve-masses must be in all men always identical, especially if they be considered (as is now believed by many) as essentially electrical, necessarily in the highest degree simple, consisting of + and —." p. 6. "Any discussion concerning the materiality or immateriality of the mental processes cannot, therefore, in the present state of our knowledge, be decided; it would fall in part, and already in its first premises, together with the question of the internal changes in the activity of the nervous system. All comparison with the imponderables, which stand in a relation analogous to matter, and appear also as somewhat immaterial, provoke however material changes and modifications, are of but little service. The mental or nervous agent has no real analogue in the whole of the universe; the theory, as Locke has already shown, experiences the same difficulties, whether they allow to think the material, or whether they will comprehend the action of an immaterial agent upon matter. That the functions of the soul, moreover, must always be accompanied by material acts, no one denies; this relation is very well developed by Stiedenroth (i. p. 52, and a. a. O); only the idea which participates in the organic accompaniment is to him a real, and known, and—a still more fruitful proposition!—indeed, the more lively the organic accompaniment, the livelier the thought." p. 7. "There is then presented in the perception a similar eccentric phenomenon, a projection similar to what takes place in sensation, not towards the peripheral surface or the outside of the organism—we are conscious of perception rather as of an occurrence within our head—but within the same sphere from which the irritation ordinarily proceeds, within that of sensation. This eccentric projection of perceptions appears to be that which necessitates a constant entrance of sensitive images into them." p. 30. "Those intuitions of movement associate themselves to the evident sensitive perception; but also into the perception, which consists solely in abstract general impressions which are indicated by words (the intelligible perception, § 17), images of movement can also enter. These, however, are then only equally obscure general impressions from large masses of intuitions of movement, which still are not generally separated, but are contained therein bundled together; in order to the realization of the intelligible perception, this aggregation of intuitions must go out in a number of single images of movement previously undetermined." p. 42. "The normal reciprocal action of the perception, whereby, through the ideas actually in the mind, other contrasting, or in general limiting, ideas are awakened, whereby all proceeds with moderate strength and rapidity, so that, in general, a conflict can arise in consciousness, so that thought and reflection, and therewith a survey of past and future, are possible, is best designated as the state of *Reflection*." p. 46.

It is possible that our author's translators have not done him justice,

but we have had no opportunity of comparing their work with the original. They say they have adhered to the literal meaning of the author, and that for the curious reason that "a more liberal rendering would only farther obscure—possibly contravene—the author's meaning." It may be so, though we can hardly conceive it to be possible; but if we are obliged to put up with such uncouth English, we had a right to expect, at any rate, that the sentences would be grammatically constructed and free from obsolete words. If a translator could find no better words to express his meaning than *uninvestigable*, *markedly*, *limitingly*, *expective*, *dement*, he might very justly fear that he had mistaken his mission. The abundance of typographical errors and incorrect citations of previous paragraphs show that the proof-reader too has but poorly performed his part. With all its drawbacks, however, the book is not without considerable merit, and the reader who is not repelled by the difficulties of the style will be amply repaid for his trouble. If the lack of an intimate acquaintance with the insane has occasionally led him into error, it is highly creditable to his sagacity that he has avoided it so well, and succeeded as he has in recognizing the truth amidst conflicting opinions. He has seldom failed to discern the advance that has been made by recent inquiry, in many points, and he cannot be charged with being narrow or illiberal.

The first four chapters entitled, respectively, "The Seat of Mental Diseases and the Method of their Study," "Preliminary Anatomical Observations," "Preliminary Physico-pathological Observations on Mental Phenomena," "The Elementary Disorders in Mental Disease," contain nothing particularly worthy of note. Many of his views are merely refinements of the closet, some are at variance with facts, and all are vitiated by a certain obscurity of thought which the author himself evidently mistakes for depth of meaning. They are not sufficiently important, however, to be discussed. Most readers, we imagine, will skip them altogether.

In the chapter on "Insanity in general," we find its analogies to dreaming, the magnetic sleep, and febrile delirium, fully and clearly indicated; and so is the psychical process of restoration, when "the old *I* returns uninjured and unimpaired to its former place." He has no faith, very properly, in those apparent restorations of reason which occasionally occur shortly before death in demented patients; nor even in those who, though long insane, have not been so quite long enough to become demented, for he believes that "the past, the future, and the most important relations of life, still remain in obscurity." This view is one of great practical importance, for such cases are sometimes litigated, and a prevalent error of courts, never much disposed to look beneath the surface, is to regard the mental condition as better than it really is.

On "the Diagnosis of Mental Disease," Prof. Griesinger's views are highly intelligent and rational. "The chief point," he says, "is invariably this—that, in the great majority of cases, there appears with the mental disease a change in the mental disposition of the patient, in his sentiments, desires, habits, conduct, and opinions." This he regards as the supreme test, though he admits the difficulty of distinguishing such change, when it comes on slowly, from eccentricity, immorality, capriciousness, or false views of life. In practice, the difficulty is much enhanced by the occurrence of incidents which have the usual characters of vice. In trials involving the question of insanity, great use is always made of this fact by counsel to prejudice the jury against the plea of insanity, and the court not unfrequently sympathizes with the counsel. As if the practice of vice and

immorality necessarily implied the possession of a sound mind, and were always the culpable cause of any mental irregularities connected with it.

The Professor admits that in criminal cases the act itself is sometimes the only evidence of insanity that we have, and he seems inclined to believe that morbid states of mind may exist in such cases without our being able to detect them by any external manifestations. He leaves us in some doubt, however, whether he would ever accept evidence of insanity drawn from the act itself as conclusive; and yet, after the admission just made, he could hardly contend against it. He says that "the symptoms of mental diseases consist only to a small extent of definite, isolated, and unmistakable morbid appearances, and never in any case of directly palpable and physical signs. They depend essentially on the interpretation of the mental acts by an observer acquainted with disorders of the mental functions and their modes of expression." In seeking for indications of insanity, in these criminal cases, outside of the act itself, we might find no definite, isolated, and unmistakable morbid appearances, but only some "mental acts" the exact relation of which to insanity would have to be determined by an expert. A single act may, and in practice often does, furnish stronger proof of mental disease than all the rest of the conduct and conversation of the patient put together. And why may it not be the criminal act as well as any other? Nothing can be more absurdly inconsistent than the usual practice in such cases. A man who has shown no indications of insanity, attempts to commit murder, or suicide, or some other violence, and he is forthwith placed in a hospital, solely on the ground of such act. If, however, he had succeeded in his criminal attempt, then he is placed on trial, and the act itself is to go for nothing in establishing the plea of insanity. We have no disposition to ignore the danger of receiving such evidence as conclusive, but this should only teach us caution and patience, and if they are duly exercised no serious mistake need be apprehended. Of all the persons that have been acquitted chiefly because of the insane character of the act, we doubt if there has been a single one whose subsequent history has led anybody to wish that the result of the trial had been different. Can we speak with equal confidence of every conviction that has been procured in spite of such plea? Of course we are not speaking of cases where the plea of insanity was used merely as a convenient substitute for some other excuse not admitted in law.

The chapters on the causes of insanity contain an admirable exposition of the subject, discarding the puerile philosophy by which it has been characterized so long, and thoroughly recognizing the advanced position now being taken by the students of mental pathology. He treats with deserved contempt the too common practice of accepting the opinions of friends respecting the cause of disease, and points out the true course of inquiry in every case. It should "embrace the whole of the bodily and mental antecedents of the individual. It must commence *ab ovo*, indeed from former generations—family predisposition—and minutely trace the bodily development, the habitual state of health, the nature of the diseases to which the patient is subject, and of those which he has already had. Likewise, as regards the mental sphere, we must faithfully and intelligently comprehend the relation of the predispositions and congenital peculiarities of disposition, the degree of education, and the governing inclinations of the individual—his mode of life and views of the world, his outward position and the nature of his thoughts." He agrees with every intelligent thinker in the belief that insanity is seldom if ever caused by any single

incident or event, but is the effect of several agencies no one of which would have been sufficient for the purpose. Considering the increasing prevalence of those habits, fashions, pursuits, emotions, and vices which exert an unfavourable influence on the hygienic condition, such as intemperance, fast living, excessive mental effort, schemes of ambition, sensational reading, &c., our author considers it a fair inference that the amount of insanity has increased with the progress of civilization, though statistics are too imperfect to furnish positive proof.

Hereditary predisposition our author regards as lying at the bottom of the greater number of cases, and as more powerful as a cause of insanity than anything else. It would be hard to find a wider discrepancy of result on what would seem to be purely a matter of fact than is afforded by the statistics of this incident, varying as the proportion of hereditary cases to the whole number does from one twenty-fifth to two-fifths. Some of the reasons for it are very obvious. In the York Retreat, for instance, the history of every patient and the hygienic condition of his relations can be learned with a high degree of accuracy, while in the Bicêtre and Salpêtrière there must always be a large proportion of cases in respect to whose relatives absolutely nothing can be ascertained, and another equally large, no doubt, in respect to whom the little information that is offered is quite imperfect and unreliable. Another reason for this discrepancy is that there is the widest difference of opinion as to what constitutes an hereditary disposition or tendency to insanity. By some no case is considered hereditary unless the disease has appeared fully developed in a parent or grandparent. By others a case is deemed to be hereditary if the disease has appeared in an uncle, aunt, or cousin. The latter course is undoubtedly the more correct, because it better expresses our actual knowledge respecting transmitted tendencies to disease. Why should it be supposed that hereditary insanity must have been preceded by overt insanity in a parent or grandparent? It is not *that* which is transmitted. Neither insanity nor any other disease is transmitted as disease. Is the victim of hereditary gout or cancer or apoplexy born into the world actually labouring under the disease? In the case of insanity, as well as of other diseases, the thing transmitted is what, for want of a better name, we call tendency or predisposition to disease. Hence, the hereditary character of a case of insanity is indicated by the presence of those organic conditions in some progenitor which constitute this tendency, and which may not be fully developed until it has reached the next generation. The consumptives whose parents died of consumption are far outnumbered by those whose parents possessed a tubercular diathesis only. The same law of transmission governs both cases, and the same theory should explain the facts in both. The presence of this tendency or disposition to insanity—this germ or taint, to use the current terms—is usually indicated by characteristic signs. We do not say always, though a practised observer, we apprehend, seldom fails to discern them. Our author recognizes among them “a striking eccentricity or extravagance of character, and a morbid exaltation of the passions,” and also “a weakness of character and excessive passionateness” that, under favouring circumstances, beget criminal acts. We would add that in the larger number of instances the “eccentricity,” the “extravagance,” the “exaltation,” is far from being very demonstrative. It may be nothing more than a peculiar way, a lack of proportion and perspective in their mental manifestations, and a kind of unreasonableness which is the opposite of plain, simple common sense. The world scarcely notices those traits;

or if it does, is scarcely aware of their significance. And yet they indicate that psychological condition which, in a subsequent generation, is transformed into insanity rightly designated as hereditary. We are glad to see that this matter is getting to be better understood. Within the last dozen years it has been clearly recognized by all the ablest writers on the disease; and by Moreau de Tours, the ablest of them all, it has been considered under relations of startling significance. Maudsley calls it, in his late work, the *insane temperament*, and lays more stress upon it than it has received from any other English writer. And it is high time that it should be properly appreciated, as it certainly has not been in several trials here and abroad where it was, apparently, the parent of crime. To ignore a condition of so much medico-legal importance, is but a poor sort of conservatism in a progressive department of science.

In this connection our author speaks of the "so-called nervous constitution" as a strongly predisposing cause of insanity. We are not disposed to question its existence, nor its agency in the development of insanity, but many of the traits which he attributes to it are themselves results of the special morbid tendency. Extravagance, excess, whims, frivolity, irregularity, low spirits, are neither collectively nor individually the attributes of the nervous temperament as described by physiologists, but they do indicate that organic condition which, generally if not always inherited, is essentially abnormal and liable to pass into unequivocal disease. In fact, his own language implies as much when he says that "the individual, with his whims and unusual modes of reaction, steps out of the ordinary beaten path of humanity, and passes in the world as an original, singular man." Such an individual is certainly something more than nervous.

Prof. Griesinger treats of drunkenness and onanism as causes of insanity, but expresses no opinion of his own as to their comparative potency, and attempts no explanation of the discrepancy of different observers on this point. Prichard refers half the cases in England to the former vice. Webster and Morison limit its effect, in regard to the patients at Bethlehem, to one-eighth or one-ninth. In Germany the proportion is reported as ranging from one-sixth to one-ninth. Dr. Rush fixed upon one-third as the proportion in this country, while by others this figure is considerably reduced. This kind of discrepancy is very puzzling to most persons, embracing even medical men not much versed in such inquiries. The mystery vanishes when we come to look a little more closely at it. Intemperance is a vice so common and in such bad repute that, very naturally, it is made the scapegoat of as much mischief as can be fastened upon it with any show of reason. It is admitted to be a cause of insanity. The exact measure of its agency is determined by a multitude of accidental circumstances. The observer perhaps partakes of the popular prejudice, or at least passively receives impressions from those who do. The patient is accustomed to drink; no other cause of insanity is apparent; and forthwith the disease is attributed to intemperance. In the face of such a stubborn fact, it would seem to be quite needless to undertake that extensive inquiry into the physiological, psychological, and pathological history of the patient, prescribed, as we have already seen, by Griesinger, in order to find out the cause of his insanity. And so with onanism. That too is admitted to be capable of impairing the mental faculties. As it is universally practised by boys, more or less, it is always at hand to serve as a cause of insanity in young people, when no other is particularly obvious. Another reason for this discrepancy may be found in the doctrine laid down by the

author in common with the most intelligent observers, that insanity is usually the offspring of several incidents acting together. If this principle had been always kept in mind, search would have been made for other agencies besides the two above mentioned, and they undoubtedly would have been found. In regard to onanism there is a peculiar source of error that will account for much of the high estimate placed upon it as a cause of insanity. Many a young man who, in one way or another, loses his ordinary measure of vigor and elasticity, and experiences some uneasy sensations, learns for the first time perhaps that the habit, to which he knows he has been addicted, frequently impairs both the bodily and the mental health. He becomes alarmed. He reads the popular books about health and disease, from which he learns that his symptoms are precisely those that are caused by "secret vice." He reads advertisements, he consults quack doctors who pander to his fears, and begins to take medicine. By this time he has become decidedly nervous; he thinks of nothing but his health; abandons his duties, and is very wretched. At this stage of the case he applies to his physician, who incautiously takes it for granted that he has practised the secret vice *excessively*; and if the patient continues to go on from bad to worse, until he becomes decidedly insane, the insanity is attributed to onanism, and so figures in the tables of causes when he reaches the hospital. An intelligent investigation would have shown that the patient had done no more than what almost every youth does; that the practice had never been excessive; that it had little if anything to do with his ailments, which, originally of a trivial kind, had finally been rendered, by fright and injudicious advice, chronic and incurable.

Within a few years, observers have been struck by the frequency with which insanity and phthisis occur together, insomuch that a very large proportion of the chronic insane die of the latter disease. In every hospital for the insane may be found patients who, within a few weeks or months of the attack, are found by auscultation to present the signs of extensive tubercular deposit, which had given no other token of its presence; who may continue till the day of their death exhibiting but few of the rational signs of phthisis. In some of them the mental disease disappears; when the pulmonary affection may either proceed to a fatal termination, or remain in abeyance for years, to be then succeeded either by a new and fatal aggravation, or by another attack of insanity. This curious conjunction of morbid actions should be well understood by all who are concerned with their treatment, in order to avoid the very serious mistake of doing more harm than good by their remedies, and of giving a prognosis that may be followed by fresh disappointment and grief. Prof. G.'s paragraphs on this subject contain a very satisfactory expression of our present knowledge respecting it, and are very creditable to his industry.

Severe injuries of the head he regards as a potent cause of insanity, though the effect may not follow until years afterwards. We are not disposed to contradict this statement, but it cannot be denied that the whole matter is involved in great obscurity. And this obscurity is not much relieved by the statistics of Schläger, who, among 500 patients, discovered 49 that had become insane in consequence of such injuries, in four of whom the disease did not appear until ten years afterwards. Certainly, one case in ten—as this number is very nearly—cannot truly express the amount of insanity in the world derivable from injuries of the head, and we can scarcely conceive of any local circumstances sufficient to account for it in any community. Where the injury is immediately followed by

any change of temper or disposition, the connection between the first and last in the series of events is obvious, but otherwise we are hardly warranted in going back eight or ten years in search of a cause that has been perfectly dormant all that time. The question is not one of simple curiosity merely, but has important medico-legal bearings, and that is an additional reason for avoiding hasty generalizations.

Without troubling himself to discuss the methods of classification already in use, or even giving them a passing notice, our author propounds his own arrangement. He makes of mental diseases two grand groups, in one of which "the insanity consists in the morbid production, governing, and persistence of *emotions* and *emotional states*," and in the other, of "disorders of the intellect and will, which do *not* (any longer) proceed from a ruling emotional state, but exhibit, without profound emotional excitement, an *independent, tranquil, false mode of thought* and *of will*, usually with the predominant character of mental weakness." We presume that one familiar only with English and French writers could scarcely conceive what forms of disease would be embraced in these respective groups. And small clew to the secret would be furnished by the farther statement that "insanity is a *curable* disease only so long as it is confined to the first group of *primitive* (emotional) mental disorders, and that it becomes *incurable* with the development of the secondary lesions which constitute the second group." We must help the reader by telling him, that the first group includes melancholia, mania, and monomania; the second, chronic mania and dementia. The first member of the first series, melancholia, "represents conditions of depression of the self-sensation and self-confidence, of concentration upon some painful emotion, of *morbid self-concentration*, and, in the highest degrees, of even incapacity for making the slightest exertion;" while "the fundamental affection in the maniacal states consists chiefly in a derangement of the motory side of the soul-life, the effort, and of such a nature, that the latter having become free, unrestrained and considerably increased, the individual consequently feels impelled to give some outward manifestation of his powers. From this tendency to an exaggerated psychical movement from within outwards, from this augmented energy and more extended range of the efforts, from this extravagance of the will, which constitute the centre-point of maniacal derangement, spring, as from a common source, those two forms," viz., mania and monomania. The essential difference between these two forms, is, that "the excitation of the motory side of soul-life," which characterizes the former, "is transformed," in the latter, "into *extravagant volition in the form of particular delirious conceptions*" marked by "inordinate vanity" and "constant over-estimation of self." It is admitted that in the former the patient sometimes acquires delirious conceptions, but they rush along with so much tumult and precipitancy, that they have no time to get fixed in the mind, as they are in monomania by reason of the less rapid succession of ideas. There is much more to the same effect on this point, but we doubt if our readers would get a better idea of the meaning, were we to quote the whole of it. There remains "a third state of mental exaltation, more apparent than real, which is never found except in monomania, and which consists in this—that the anomaly of the psychical self-sensation, this overweening disposition which has originally given origin to all those false conceptions by which the patient seeks to explain his state, disappears more or less completely; but the false conceptions themselves, the exalted ideas which the individual entertains of his own merits, let loose from the foundation

on which they were erected, persist, and as constantly present errors of judgment, completely govern the whole intellectual life of the patient." This is called *Partial Dementia with Exaltation*.

This is not the sort of classification which might have been expected from one daily and hourly conversant with the insane, because it abounds in a blending together of incongruous facts that are never associated in actual life. A classification, at the best, adds nothing to our knowledge; but if it associates facts by false relations, then it misleads the student, and harms rather than helps him. And this is just the charge we make against our author's, that, if implicitly followed, it would be the means of conveying some very erroneous ideas respecting insanity. The radical distinction of depression and exaltation, upon which one of the divisions is made, is far from being sufficiently uniform and precise for this purpose. He himself admits that most cases of insanity begin with depression, even those which end in excitement. We know that in a host of cases, these two conditions alternate, often within very brief periods; and that in a few, the patient cannot be said to be excited or depressed. Under which head are we to place the numerous cases of what the French call *folie circulaire*, where the patient for a period is plunged into the very depths of dejection from which he rises to the topmost heights of confidence and hope, there to remain for an equal period, and thus complete the vicious cycle that may be again and again repeated?

The Professor is not more fortunate in the characteristic features which he assigns to the two states. Melancholia is marked by "self-concentration," "depression of the self-sensation," "incapacity for making the slightest exertion;" while in the maniacal states the patient "is impelled to give some outward manifestation of his powers." These traits are derived from the picture made out of those demonstrative cases that leave a lively impression on the mind; not from careful observation in the wards of a hospital. They are never without patients in the very depths of misery and despair, who are incessantly restless, destructive, and even violent. Indeed, the Professor recognizes this fact himself, but he makes no attempt to reconcile it with his definitions.

The sense in which he uses the term monomania is as contrary as possible to accustomed usage and to etymological signification. By all French, English, American, and, we had supposed, German, writers, it has been restricted to cases manifesting a single delirious conception, moral or intellectual. And the tendency has been, as our knowledge of mental diseases has advanced, so to narrow the range of its application as to make the continuance of its use in classification of questionable propriety. The mental disorders which our author refers to monomania are far from being confined to a single idea; indeed, he does not pretend that they are. He describes them as differing from those of mania only in the circumstance that they are unaccompanied by fury or raving, and as a consequence thereof, that the ideas are more definite and persistent. And his attention was not fixed exclusively, as one might suppose at first thought, on those cases where the mind is a prey to one or a few delusions predominating over the rest. His field of vision has obviously embraced a much wider range of mental disorder, for we recognize in his descriptions the traits of *folie circulaire*, general paralysis, and almost every other form of insanity except proper monomania. "The patient rejoices," he says, "over his great mental (and bodily) well-being; he feels himself richer and more free;" he easily "becomes irritable and violent;" is "impatient and angry"

when opposed; he is fond of using "grand, high-sounding words, the most brilliant images, the highest possible numbers (thousands, millions, &c.);" he possesses "inexhaustible resources;" occupies "a high position." "To this class belong those patients, so numerous in asylums, who believe they are generals, Napoleons, millionaires, reformers of the world, gods, and heroes; the many female patients who are beloved by kings; those who believe they hold frequent and intimate intercourse with the Deity." Hallucinations "persist, foster, and essentially strengthen the delirious conceptions. The patient, for example, sees an angel bringing to him a message from heaven; hears voices commanding him to commit certain deeds, or communicating unintelligible nonsense which he believes to be some divine mystery; worthless objects appear precious, &c."

But the Professor is not done with amazing us with his ideas of monomania. Its essential, fundamental disorder is "persistent over-estimation of self!" From this, as a necessary consequence, spring all the accompanying moral and intellectual disorders. He does not mean that kind of egotism which is implied by the patient's thinking only of his own concerns and referring everything to himself, for that is manifested more strongly in melancholia. He uses the language in its ordinary, popular sense, and by that he must be judged. The idea of extraordinary powers and possessions so common in states of maniacal exaltation does not necessarily imply an excessive self-esteem, any more than it does in states of depression. The poor creature who believes that if he eats the food placed before him the whole world will perish of starvation; or if he makes water the earth will be deluged, believes himself to be the subject of extraordinary power, but he cannot be charged with an excess of self-esteem. On the contrary, he is the most miserable of men, without a thought or feeling in his head calculated to promote his self-complacency. It would be sinning against the first principles of philosophy to suppose that this idea of extraordinary powers can spring from such opposite sentiments as the self-esteem of one, and the self-abasement of the other. If indeed there were any relation between the overweening self-estimate and the idea of peculiar endowments, it is not very obviously one of cause and effect. The grand delusions which occur in the states of maniacal exaltation often spring more or less directly from habits, tastes, speculations, that had long been a part of the mental experience, though the bond of connection may not be very apparent. Large self-esteem, original or acquired by disease, may give a tone to the delirious conceptions, but we see no warrant for regarding it as the primordial germ of all the fancies and follies of monomania. But even admitting—as we do not—that they bear to each other the relation of cause and effect, it is just as likely as otherwise to be precisely the reverse of that which our author has assigned. A person who is conscious of possessing remarkable gifts or privileges might naturally feel some risings of self-esteem on that account. The mistake underlying all this theory is that of supposing that the overweening estimate of self precedes the delirious conceptions. Self-satisfaction, self-complacency, undoubtedly may precede them, but this is a very different feeling from that of excessive self-estimation. It is but a phase of that exaltation which characterizes this group of mental diseases, and indicates the general quality of the nervous system, rather than the activity of a particular moral sentiment.

Thus far we have not been profoundly impressed with the Professor's skill in classification. What follows is not calculated to change that impression. The second general group of mental diseases embraces, as we

have seen, chronic mania and dementia. They are called States of Mental Weakness, and are farther designated as incurable, the first general division of mental diseases being into curable and incurable. This seems to be but a puerile foundation for a classification of mental diseases. If the subjects of one division are mentally weak, the presumption is, that those of the other division are mentally strong. In the former, unquestionably, the memory is poor, the judgment impaired, the perceptions dull, the affections gone, and the thoughts succeed one another with little logical sequence—all, expressions of mental weakness, we admit. But in the latter, also, there is a diminished power of endurance, as well as of application to any pursuit or duty, an inability to discern nice relations, or grasp remote contingencies—a condition of mind that may be fairly termed weakness. Chronic mania, which embraces a very large proportion of the insane, is a term expressive of some relation of time, and in ordinary use, is not without its convenience, but it is altogether too vague and indefinite to serve as a distinction between one class and another. The point to be first settled is, within what period mania becomes chronic, and, certainly, nobody would undertake to do that. Every observer knows that many a patient, after presenting, for several years, the usual characters of chronic mania, is restored to reason and the use and enjoyment of life. It would seem, in fact, as if there were no place for chronic mania in a class of mental disorders characterized like this. It could properly belong to it only by reason of having lost the characters of mania, and taken those of dementia. Unconsciously to himself, probably, the author had in his mind two different grades of the same affection, and his meaning would have been more obvious if they had both been called by the same name.

The descriptions of the particular forms of disease, melancholia, melancholia with stupor, hypochondriasis, mania, dementia, are well drawn up, and convey as clear and definite an idea of them as one would expect to obtain from books. They are illustrated and enlivened by cases, which, many would say, are out of proportion to the dimensions of the book. In regard to the vexed questions of morbid psychology, he is not so outspoken as we could have wished, and some of them have been passed over without that array of facts and minute consideration of them which their importance deserved. But his remarks upon them are judicious and liberal, and vitiated by none of the bitterness of controversy which is so apt to creep into scientific discussions. Didactic rather than argumentative, he is contented with a succinct expression of his views, without much reference to the views of others.

On the subject of moral insanity, which, for the last twenty years or more, has held so large a space in the books and other publications on insanity, our author says comparatively little, and the exact meaning of that is not always very clear. Under the head of *Melancholia with destructive and murderous Tendencies*, he describes those cases in which "homicidal impulses, suddenly and without external motive, arise in persons who have been hitherto of a lively, joyous, and loving disposition, and incessantly intrude themselves upon their thoughts," and also that other group of cases "in which such impulses originate in those who have been long overwhelmed with grief, concentrated in self, and have been actual misanthropes." He regards such persons as irresponsible, but scarcely alludes to the question so much agitated of late, whether the moral derangement is necessarily accompanied by some degree, though ever so little, of disorder of the intellect. In the same light he regards those cases of morbid

impulse to incendiarism, occurring chiefly in the young, but dislikes the term *Pyromania*, which, he says with a grim sort of sarcasm, "possesses at least the advantage of previously settling the object of discussion." The cases designated as *Moral Insanity*, *Folie raisonnante*, *Mania sine delirio*, he refers to "slight and chronic melancholia" of which "they represent the actual form."

Acute Dementia, for the most part, he regards as equivalent, and nothing more, to Melancholia with stupor, but he admits that it may be occasionally observed. This we apprehend to be a correct expression of the facts. While the most of those dumb, passive, inert creatures, remaining, for hours, precisely where and as they were put, without even the cognizance of the most natural wants, are conscious of what is going on around them, and are revolving some painful delusion, there are some, apparently very like them, whose mental functions are suspended, for after recovery they look upon this period of their existence as a complete blank.

The account of the phenomena of recovery might well have been more full and particular, although so far as it goes it is correct and instructive. Recovery may be sudden, he says, "or gradually arrived at after progressive diminution of the symptoms," but he does not warn the reader that a sudden restoration of reason is generally unreliable, and should not be allowed to raise unduly the hopes of the friends. When mania comes on with some degree of suddenness and violence, there frequently occurs, within the first month or six weeks, a remission of the disease, having all the appearance of perfect recovery, and regarded as such by the incautious observer. This phenomenon, first distinctly noticed by Esquirol, and verified by many if not all, who have had charge of the insane, is one of too much practical importance to be lost sight of, if we would avoid mistakes of the most serious nature. It is too brief to lead to much mischief to an inmate of a hospital, but in private practice it has been the occasion of indulgences and privileges that have entailed very disagreeable consequences. No physician who has had much personal charge of the insane is anxious to see a very decided improvement in his patient within the first month, for, though it may occasionally endure, it is far more likely to be followed by relapse and an aggravation of all the symptoms. Generally, recovery is a gradual process, one delusion after another giving away, one fancy or vagary after another replaced by clear conceptions, and the affections after a while resuming their accustomed place. It must never be forgotten that this process often seems to be completed long before it really is. We would not except from the scope of this remark very many of those who are discharged from our hospitals as recovered. Subsequently, such patients will admit that they were not quite well when discharged and that disease lingered about them in the shape of some false notion, some unfounded prejudice, some liability to excitement. There is another class of patients who are restored sufficiently to resume their place in the world and engage in their customary duties, who never recover their proper integrity of mind. They are unable to look upon their condition while lying in the shadow of disease, as everybody else does. They refuse to admit that they were ever really insane, though they may have been a little nervous at times. They blame their friends for committing them to a hospital or otherwise interfering with their movements, and never cease to entertain feelings of intensest bitterness towards all who were concerned in the measure. While utterly blind to the incidents that rendered such interference necessary to save them from ruinous transactions or mortifying

exposures, they torture the most natural and innocent acts of others, meant for their good, into instances of abuse and insult. Restrained by no scruples of veracity—for this is among the virtues that are first overpowered by the intrusion of disease, and the last to regain their normal place under healthier conditions—they not only misrepresent and pervert actual occurrences, but, in a manner so plausible and circumstantial as to deceive all but the very few who are professionally conversant with such persons, they state things that never occurred at all. These are the people who go about the world reading lectures and writing in newspapers against hospitals for the insane, prosecuting their friends and physicians in actions of conspiracy, malpractice, or false imprisonment, and with a perseverance worthy of a better cause, labouring with legislatures for the enactment of laws the most adverse to interference with the liberty or property of the insane. This is one of the facts of insanity which no text-book on the disease should fail to record, for few surpass it in practical importance.

The chapter "On Several Important Complications of Insanity" contains a very good *résumé* of the present state of our knowledge respecting general paralysis and epilepsy. In the account of the former, there are two or three particulars the entire accuracy of which we should question. The muscular affection is said to be "even at the commencement very extended, indeed almost general, although at the same time very feeble." This, certainly, does not agree with the results of our own observation, which would lead us to believe that for weeks and months after the tongue begins to be affected, no other muscular affection may be observed. Even the next most frequent one—that which is witnessed in the lower extremities—may not appear until some time afterward. "The slight tremor" which is said to "render the movements of the upper extremities irregular, awkward and constrained, at the commencement," we are inclined to consider as an exceptional, rather than a common occurrence. We would make the same remark respecting the statement that, at the commencement, "it is rare that a melancholic stage does not exist." These things may seem, at first sight, hardly worth mentioning, but so many questions of great practical importance are often involved in the diagnosis of general paralysis, that inaccuracy of statement respecting its initiatory symptoms is no trivial matter.

In treating of the medico-legal aspects of epilepsy, Prof. Griesinger has taken a step considerably in advance of the common mark. He believes that "a morbid mental state may exist and have influence, yet present no external manifestation," and, in the spirit of this belief, he was constrained to say in a case of homicide committed by an epileptic, "that neither before, nor at, nor after the deed, did we find certain signs of mental disturbance, yet, notwithstanding, it was possible that this disease allowed influences to act on the phenomena of volition, which obscured reflection and weakened the freedom of the will, without, however, manifesting themselves by any external symptoms." In this opinion we believe he was correct, and we also believe with him that the doubt which it implies as to the responsibility of the accused should inure to his benefit. We have been too much in the habit of considering epilepsy as incompatible with responsibility only in its more demonstrative phases—those in close connection with a fit—regardless of those mental impairments which represent the effect of the long-continued action of the disease, and which escape the notice of the casual observer.

The chapters on the Pathological Anatomy of Mental Disease contain

the results of modern investigation, clearly described and conveniently arranged. For a task implying so much labour and research, the author is richly entitled to the gratitude of the student. To some of his theoretical views we are hardly prepared to yield unqualified assent, though they are not so clearly expressed as to prevent entirely their being misunderstood. He accepts it as a settled fact that in many cases the most skilful autopsy reveals no lesions or changes within the cranial cavity, but this fact does not warrant the conclusion, he thinks, that such lesions when present are not the cause of the mental disorder. This position he undertakes to strengthen by what he regards as an analogous case, but which seems to be nothing more than a paltry chopping of logic. Because cough and dyspnœa occasionally exist without anatomical changes in the lungs, we do not say when they accompany pneumonia that they are not the results of this pulmonary affection. Very true; but what we do say is, that cough and dyspnœa result from other conditions than that of pneumonia or any other structural change. He admits that the lesions we discover after death are not "the *immediate* cause of definite psychical anomalies, of this or of that form of delirium; or that the *individual symptoms* of the mental derangement are the direct result of the anatomical lesions." He also admits that various pathological lesions in the insane have no connection with the mental disease, but how they are to be distinguished from such as are thus connected, he does not inform us. We are gravely told, however, to "investigate what, according to experience, the post-mortem appearances in the insane are, and then, by comparing these lesions and the processes which lie at their foundation with the symptoms observed during life, to arrive at comprehensive anatomical views in regard to these cerebral affections!" In answer to the question whether there is any specific alteration in insanity, meaning thereby a change which everywhere must invariably and in the same manner be present, he says, "it must not only be answered in the negative, but considered as *a priori* false," for the reason that such diverse affections as melancholia, dementia, &c., cannot possibly spring from one and the same organic change. By the same sort of logic, he would say that tubercle, so called, is a very different thing in the uterus or the intestines, from what it is in the lungs, because it gives rise to a different order of symptoms. His own statement of the matter, viz: that certain anatomical changes necessarily produce "mental disturbance," is liable to the same objection, for he does not pretend that "diffuse inflammation of the gray substance," "extensive meningitis of the convex surface," "acute œdema of the greater hemispheres," "rapid bilateral atrophy of the convolutions," &c.—the changes that he particularly instances—are always respectively accompanied by exactly the same form of "mental disturbance."

We see nothing unreasonable in the idea that insanity is caused by a specific organic change very different from those lesions that are usually observed after death. We have not yet learned what it is, for it is not discernible by any of our present means of observation; but there can scarcely be a doubt that in the inmost constitution of the organ—in the extreme vessels, or the cerebral cells—there occurs some abnormal condition that gives rise to mental disorder. The inflammations and congestions and effusions and thickenings witnessed at the termination are the results of chronic disease, having nothing to do with its production. If, by some clairvoyant power, we could inspect the brain during life, in the early stages of insanity, we should discern no sign of their existence. To talk

of their being the cause of insanity is as absurd as it would be to say that the wear and tear of the engine is the cause of its motion.

In the chapter on Prognosis, the signs and conditions favourable or unfavourable to recovery are indicated in a manner that shows a close and careful study of the disease. It might have been considerably extended, but we are not quite sure that it would have been proportionally useful. Such particulars can be properly appreciated only by those who have had much practical acquaintance with the disease; and they do not need them.

In the chapter on Therapeutics, the prevalent methods of treatment are well presented, and the author's remarks are eminently judicious. It may be profitably read by all who are charged with the care of the insane—more so by such, we imagine, than by the young physician who finds himself called upon, for the first time, to prescribe for an insane patient. He evidently has but little faith in medication, and makes no attempt to assume a virtue he does not possess. The specious proposition that insanity being a disease of a bodily organ should be treated by drugs or other medical appliances, as other disease are, beguiles him neither into extravagant commendations of this or that thing, nor into those vague utterances that seems to imply a great deal of reserved skill, but scarcely help the reader in his practice. As some other diseases may be best treated with little medication so may insanity, while incalculable benefit may be expected from the use of moral means—those which are applied directly to the mind. Our author's remarks on this topic show that he well understands the relations that exist between such means and mental disease, and also the conditions by which they are liable to be modified. So much common sense is not always seen in this connection, and as seldom do we see so keen an insight into the ways of the insane mind. We wish that our space allowed something more than a bare mention of the principles that lie at the foundation of all correct moral treatment. No good is done, he says, by directly opposing the morbid dispositions, feelings and ideas; for the insane will not receive advice nor tolerate opposition. Quite as useless and even more injurious is any attempt to overcome delusions by logical reasoning; and passionate discussion only makes the matter worse by inciting the patient to justify his views and seek reasons for them. Morbid ideas are not to be subdued by any kind of proof or evidence. To spread all his wealth before one who thinks he is ruined, to pull down a wall in which another fancies his tormenting enemy is hid, would only irritate them and call their attention more forcibly to their false ideas. The ingenious artifices sometimes used to convince the patient of his errors seldom accomplish the purpose. They more often irritate him by the deceit, or, at best, effect only an exchange of delusions. Strong moral shocks and violent emotions have been used to excite a salutary diversion of thought or feeling, but the little good that has been derived from them is but a poor compensation for the mischief they are likely to produce. Not less injurious than any of these practices, is that of assent to or sympathy with the delusions of the patient. Such assent only confirms him in their belief, and he may afterwards appeal to it. When the physician finds himself unable to avoid the expression of his opinion, as it not unfrequently happens, then he should give it, gently but firmly, without concealment or disguise. The best means for weakening the delusion, is that of *mental diversion*, as it may be called, effected by employment, amusement, judicious conversation and suitable reading. None of these is so efficacious as work, especially work in the open air, to those accustomed to labour, and the more steady and methodical it is, the better

for the patient. But in the acute stage of the disease it should be cautiously used, because then it may become a source of excitement. Promiscuous dancing parties are not commendable, and it is added, with a delightful naiveté, that "in a great German city the newspapers annually contain the announcement of a brilliant ball at the lunatic asylum, with the insulting intimation that the company was not disorderly." Religious ministrations are ineffectual as a means for promoting recovery; and in some forms of melancholia the propensity of the patient to distort whatever he hears into an occasion of disquietude renders it necessary to use them cautiously and with some knowledge of the workings of the diseased mind. Clergymen get possessed with the idea that the truths of the gospel can hurt nobody, and may be profitably dispensed under all circumstances. It is obvious that those who are impatient of advice on the subject and insist upon the correctness of their own views, are liable to do harm as well as good. To obtain the greatest possible benefit from all these means, the removal of the patient to a hospital is necessary in the great majority of cases, for there only can they be applied with the ease, promptness, and regularity that will insure success. I. R.

ART. XVI.—*On the Pathology and Treatment of Albuminuria.* By WILLIAM H. DICKINSON, M.D., Assistant Physician to St. George's Hospital and to the Hospital for Sick Children. 8vo. pp. 265. London: Longmans, Green & Co., 1868.

THIS work is by an author already well known through several able and interesting articles. It is a very favourable specimen of a class of works, yearly becoming more necessary, which combine a theoretical and clinical discussion of some one important subject.

The group of diseases which is the subject of the present volume certainly possesses great interest, and the author, in discussing them, has conjoined to a clear and impartial *résumé* of the knowledge already accumulated, a fair amount of original research and a series of well reported and highly illustrative cases.

Those diseases only of the kidneys are considered, which declare themselves by albuminous urine, the author intending, at some future time, as we learn from the Preface, to treat of the remaining disorders to which the kidney is liable.

The microscopic changes which occur in the kidney receive their full share of attention, and the first chapter contains some excellent advice, in regard to the necessity for observers to familiarize themselves with the normal appearances of these organs, and with those changes which are compatible with health. The author himself gives the results of the examination of 68 apparently healthy kidneys, and states that in but comparatively rare cases were the tubules and epithelium found typically healthy, the cells being frequently found opaque, cloudy, granular, fatty, variously coloured, or even small, irregular, and crumbling.

It should be remembered, however, that although we may find in the kidney, as in other organs, which have shown no impairment of function, slight degrees of almost every pathological change of the gland cells, such

alterations can scarcely be considered to be without significance. Thus, it is true that in many chronic diseases, unattended with symptoms of renal disorder, the renal epithelium may contain oil; but certainly in such cases, it must be held that the integrity of the organ is impaired, and that probably its ability to perform its function depends chiefly upon the less degree of functional activity demanded of it in the course of such wasting diseases. And thus, on the contrary, as the observations of Dr. Dickinson confirm, it is rare to find, after acute local diseases unattended with symptoms of renal disorder, any noticeable alteration in the renal epithelium or tubules. Leaving out then the mere alterations of the epithelial cells, as not absolutely reliable evidences of disease, the author divides diseases of the kidney into three classes, according as they affect the secreting tubes with their epithelial, constituting Tubal Nephritis; the intertubular fibrous tissue, constituting granular degeneration; or the bloodvessels primarily, as in the so-called amyloid degeneration. According to this view, fatty degeneration always occupies a secondary place in the tissue changes; the epithelium frequently becomes fatty as the result of tubal nephritis, but this is not the primary change, but the effect of an altered state of the nutrition of the cells, consequent upon the inflammatory stage. This entire exclusion of fatty degeneration as a separate and essential form of renal disease appears to us, however, somewhat too absolute.

A short chapter follows upon albumen and casts, in which the presence of albumen in the urine is recognized as being due to the admixture of serum which has passed from the bloodvessels into the urinary ducts. The conditions under which this occurs are mainly due to: 1st. Congestion; undue determination to the vessels supplying the glandular structures, as in cardiac disease or from renal irritants; 2d. A specific change in the arteries, as amyloid degeneration, which renders their walls unnaturally pervious; 3d. A loss by the secreting tubes of their epithelial lining in consequence of which they readily yield passage to fluids which otherwise could not traverse them unaltered.

In this summary no account is taken of those cases whose occurrence can scarcely be doubted, in which, although a slight degree of congestion may coexist, the chief cause of the escape of serum is some alteration in the blood itself.

The appearance of casts in the urine in like manner is attributed to the escape of fibrin from the capillaries, which coagulates and entangles whatever contents may be in the tube, whether blood, pus, or epithelium. The fibrin may escape from the Malpighian tuft, from the denuded wall of a tubule, or even from the wall of a tubule which is merely the seat of disturbed epithelial growth.

The author then proceeds to the consideration of various forms of renal disease, beginning with acute tubal nephritis. In this affection, which is strictly a renal catarrh, and corresponds to Johnson's Acute Desquamative Nephritis, the inflammation is limited to the mucous membrane of the tubes, and there is a rapid proliferation of cells, which may be either natural or fatty, or appear as pus corpuscles.

In cases which do not soon terminate, the disease becomes chronic and results in the production of the well-known large white kidney. A good description of the pathological anatomy of this kidney, both in the acute and chronic stage follows, but we will only allude to those points which are essential in the diagnosis of this from the two other forms of renal disease.

In the large white kidney the cells are very frequently fatty, and the tubules are either obstructed by the cells or may contain fibrinous casts; in places, they are found dilated. The capsule of the organ is thin and readily removed, and there is no increase of fibrous tissue either between the tubules or around the Malpighian body. This form of kidney generally remains large and smooth to the last, unless albuminoid change is superadded, bringing with it gradual loss of bulk and producing the small smooth kidney; in no instance, however, has the author known the loss of the contents of the tubes to be sufficient to reduce the once enlarged kidney below its natural bulk. This point will be again alluded to under the head of granular degeneration.

The predisposing causes appear to be sex, the disease being most frequent in males, even among children; and early life, the disease being common after the 2d year, but rare after the age of 40, and almost unknown after that of 50 years. Gout does not in the least predispose to it. The exciting causes are far more numerous and interesting, and are thus enumerated:—

1. Circumstances which throw upon the kidneys the work of other glands—thus cold to the surface acts by checking the perspiration; obstruction to the escape of bile; destruction of one kidney, by throwing double work upon the other (?)

2. Diseases which develop a material which acts as a renal irritant; scarlatina, measles, etc.

3. Matters taken from without, which act as renal irritants; turpentine, alcohol, cantharides, arsenic, etc.

Among adults, cold is undoubtedly the most frequent cause. It acts most injuriously when there has been some preceding cause of exhaustion, or when applied during sleep, when the body is more easily affected. The cold is also usually protracted and applied during free perspiration. This cause is not so active either in arctic or tropical climates, as in moderate ones. The reason of this is of course to be found in the general fact that those organs are most apt to be affected by the application of any morbid cause which are in the highest state of functional activity. Thus in arctic temperatures, where the function of respiration is usually active, there is a vast preponderance of diseases of the respiratory apparatus; in tropical regions, on the other hand, it is the alimentary canal and large glands in connection with it which suffer most; whilst in temperate climates, where the skin and kidneys are very active, the sudden and marked changes in temperature which so frequently occur, tend to abruptly check the cutaneous secretion, and thus induce congestion of the kidneys which but too often eventuates in inflammation. The form of nephritis thus occurring is perhaps the most rapid and congestive known; and the epithelium, according to the observations of the author, is especially apt to become fatty.

In children, on the other hand, scarlatina is by far the most frequent cause of this disorder, the kidneys being irritated by the specific poison, which is partly removed by them. The action of external cold, however, often serves as the immediate exciting cause, especially during desquamation. Albuminuria has also been observed during the course of, or as a sequel to several other diseases. Thus it has been known, in a few cases, to follow measles; in diphtheria the urine is albuminous in even a larger proportion of cases than in scarlatina, though here the albumen appears earlier in the course of the disease, is unattended with any marked diminution in the urinary constituents, or with constitutional symptoms, and nearly always

disappears during convalescence. Albumen has also been detected, and usually with casts, in the course of erysipelas, typhus fever, variola, pyæmia, cholera, acute rheumatism, and in affections of the liver attended with jaundice. In all of these cases, however, though the presence of albuminuria is invariably an unfavourable sign, the affection of the kidney rarely becomes chronic and inenrable.

Among irritants foreign to the system which appear to act as causes of this form of nephritis, alcohol, whether taken in substance or inhaled in the form of vapour; cantharides, whether taken internally or absorbed by the skin, and turpentine, are specially active. The observations of Dr. S. Weir Mitchell relative to the production of œdema, occasionally associated with albuminuria and tube casts, by the use of arsenic, are referred to.

The course of this variety of renal disease is then well sketched both in its acute and more chronic forms; and here, as in other portions of the work, the subject is illustrated by interesting statistics drawn from the note-books of St. George's and the Children's Hospital.

It seems that marked hæmaturia occurs in nearly one-half of all fatal cases; that frequency of micturition is much less common; while œdema is an almost invariable symptom; and dropsy, in the form of ascites and hydrothorax, stands next in frequency. Vomiting is characteristic of the disease rather than diarrhœa. Uræmic poisoning and dropsical accumulations are the chief sources of danger in the adult; while in childhood, inflammatory affections of the respiratory organs usually cut short the case. This statement, as to the comparative rarity of these latter affections in the course of nephritis in the adult, a complication which has been spoken of by several European writers as of frequent occurrence, accords perfectly with the results of hospital experience in this city. Despite these various dangers, however, the natural tendency of the disease is to recovery, especially in the more acute form; though, even in the most confirmed and seemingly hopeless cases, recovery will sometimes occur.

The changes in the urine are briefly summed up as follows: Albumen is always present, and in larger quantity than in any other form of renal disease. All the normal constituents of the urine are diminished; the water, urea, and chlorides to a greater extent than in any other disease of the kidneys. The specific gravity is rarely much below the normal standard. The colour is at first deeper, and reddish; and the urine deposits a sediment consisting of blood-corpuscles, renal epithelium, and casts of the renal tubules.

The epithelium may be fatty, natural, or pus-cells may appear in its place. The casts, in the early stage, may be either epithelial, granular, or of the small waxy form; the large hyaline casts, from straight tubules which have been deprived of their epithelium, occur only at a very late period. It will be seen subsequently that these microscopic characters are not diagnostic. We have already mentioned that the author infers from his observations that the epithelium has a much more marked tendency to become fatty in cases due to cold, than when the disease follows any other cause.

In regard to the *treatment* of tubal nephritis, after briefly stating the plans advised by the highest authorities upon renal disease, he gives that which has proved most successful in his own hands. In view of the rapid tendency to anæmia, depletion should be limited to cupping over the loins. He believes that active purgation and diaphoresis, excepting in the later

stages of the disease, to effect the removal of dropsy, are apt to be injurious, since they divert the water which is needed to wash out from the tubules the plugs of epithelium which obstruct them. On this account he advises the use of diuretics, and especially of large quantities of pure water, with or without infusion of digitalis; and under this simple treatment he has found the disease, especially in children, generally to terminate favourably. It is undoubtedly true that a free use of water and unirritating diuretics is of much service, but it must also be borne in mind that hydragogue purgatives and diaphoretics are not recommended in the early stage of nephritis, merely with the view of establishing vicarious elimination of the urinary constituents, but also of relieving that congestion and incipient inflammation with which the exuberant growth of epithelium, and all the subsequent troubles, are directly connected. After the acute stage has passed, he advises iron in combination with saline diuretics.

The treatment of cerebral symptoms in the course of renal disease must be directed towards relieving the nervous disturbance and removing the retained excreta. To effect the first of these objects, alcoholic stimulants, and opiates in small and carefully regulated doses, and the inhalation of chloroform, are advised; while at the same time, active diuretics and purgatives must be administered to promote the discharge of the accumulated effete matter.

The second division which the author makes of renal disease is the well known granular degeneration, which differs widely from tubal nephritis in the seat of the lesion, its symptoms and course, as well as in the age at which it occurs, and the causes to which it is due. The affection is analogous to cirrhosis of the liver, and is here, as is usual, described as consisting in a slow chronic inflammation, which leads to a morbid increase in the intertubular fibrous tissue, beginning at certain points upon the surface and extending inwards. This new growth, as it forms, contracts, and in so doing not only incloses and compresses such parts of the gland as are in its path, but draws in the surface at its point of origin.

In the early stage the cortex is reddened and coarse-grained, and possibly a few small cysts may be detected; the organ is harder than natural, but not much altered in size. In the advanced stage the kidneys are very much reduced in size and weight; the capsule thickened, opaque, and adherent; and the surface studded with prominent light-coloured, hemispherical granulations, and often presenting several cysts of various sizes.

Microscopic examination confirms the impression that there is an obvious increase of fibrous tissue in the organ, and shows that it is accumulated around the Malpighian bodies, tubules, and bloodvessels.

The tubes are found irregularly packed with detached epithelium, or dark granular matter, though this accumulation of epithelium is far less general than in tubal nephritis; or their calibre may be occupied by transparent fibrinous casts. In many cases the epithelium has been entirely removed, and the compressed and collapsed tubes resemble threads of fibrous tissue. According to Dr. Dickinson, however, in the great majority of cases the epithelium itself remains healthy, or if at all changed, merely becomes distorted from pressure. In regard to the actual anatomical conditions found in the advanced stage of granular degeneration, all observers are agreed; but it is perhaps premature, in regard to the primary nature both of this affection of the kidneys and of cirrhosis of the liver, to entirely exclude the theory that the change consists in a destructive alteration of the epithelial cells, and that the appearance of increase of the fibrous tissue is merely due

to the condensation of that which naturally existed, caused by the emptying and collapse of the tubules. The cysts so constantly observed in the granular kidney are explained as arising either from transformation of tubules which have been completely occluded by the pressure of the contracting interstitial exudation, or from dilatation of Malpighian bodies due to the same cause.

The author refers to a series of experiments performed by him a few years ago, in which the obstruction to the circulation in granular kidneys was well demonstrated by passing water, with a fixed pressure and temperature, into the renal artery, and measuring the amount which escaped by the vein in a certain time. The result was, that a kidney affected with granular degeneration could not transmit one-fourth so much water as passed through a healthy kidney under the same circumstances.

The essential difference between this form of renal disease and tubal nephritis is equally shown by the difference in their causes. It is almost unknown before the age of twenty years. A case recorded in the books of St. George's Hospital, which ended at the age of eighteen years, is referred to as showing the earliest period at which the disease has been known to cause death. We have, however, during the past year, observed a case in which death took place from uræmia at the age of fifteen, the kidneys being found, after death, in an advanced state of granular degeneration.

The general conditions to which this affection can be traced are: 1. Conditions which produce and maintain venous congestion of the kidney—such as valvular disease of the heart, and pregnancy. 2. The gouty habit, from whatever circumstance it may arise, but more especially when associated with lead-poisoning. 3. A general tendency to fibroid degeneration, as shown by changes in the liver, lungs, and other organs, frequently occurring in chronic alcoholism.

Valvular disease of the heart is assigned as a frequent cause; thus in 153 cases of valvular disease examined by the author, the kidneys had granular surfaces and more or less contracted cortices in 67, and in 29 were hard, congested, and increased in bulk, but still smooth. From these and similar observation, it seems probable that in a fair proportion of cases the prolonged congestion due to cardiac disease induces granular degeneration of the kidneys; whilst in regard to the analogous affection of the liver, cirrhosis, this cause is not admitted by perhaps a majority of pathologists.

In the same way, by causing prolonged congestion from pressure of the uterine upon the renal veins and vena cava, pregnancy, especially if often repeated, may produce granular degeneration of the kidneys.

Gout is also a frequent cause of this form of renal disease, and when the influence shown by Garrod, of the absorption of lead upon the development of the gouty condition, is borne in mind together with the additional fact that many of those exposed to the influence of lead die with granular kidneys without having manifested any external gouty symptoms, the powerful effect of lead in producing this disease is evident. Thus Dr. Dickinson finds that of 42 men, having had to do with lead, who died from disease or accident in St. George's Hospital, 26 had distinct granular degeneration of the kidneys, in most cases having been the cause of death. Indeed the author asserts that at least one-half of painters eventually die from this form of renal disease.

In the following chapter the symptoms of granular degeneration of the kidneys are well described. The beginning of the disease is usually with-

out definite cause, and so obscure and insidious that a person who has scarcely imagined himself at all out of health may be suddenly seized with cerebral symptoms due to uræmia.

Dropsy may be absent throughout the entire course of the disease, though it often occurs and usually in the form of œdema. There is marked derangement of digestion. The left ventricle of the heart becomes hypertrophied in almost 50 per cent. of the cases, and the author adheres to the explanation suggested by Dr. Bright that the enlargement is due to an alteration of the blood, which causes it to pass with difficulty through the capillaries, and thus necessitates more powerful action of the left ventricle. Atheroma of the arteries is also frequently found, having been noticed by the author in not less than 52 per cent. of 250 cases. It is interesting to recall at this point the double relationship which both cardiac disease and atheroma hold to granular degeneration of the kidneys. We have already seen that the renal disease frequently induces both the other affections; and conversely that cardiac disease is frequently attended with granular kidneys; and we have observed more than one case in which advanced atheroma of the renal arteries appeared to have been instrumental in developing this form of renal degeneration.

Inflammatory affections are much less likely to occur during the course of this disease than in tubal nephritis. On the other hand, death frequently occurs from apoplexy due to the atheromatous condition of the cerebral vessels; thus of 75 victims of apoplexy examined in St. George's Hospital during the course of twenty years, 31 are described as presenting decided granular degeneration of the kidneys. The author very justly observes that here three elements combine to favour the occurrence of apoplexy; the atheromatous condition of the cerebral arteries; the increased force of the hypertrophied left ventricle; and the increased pressure upon the arterial wall due to the refusal of the capillaries to transmit the altered blood. Another lesion due to the atheromatous condition of the arteries is apoplexy of the retina which not rarely produces dimness of vision or total blindness in the course of this disease.

The natural tendency of the fully developed and uncomplicated disease is to produce death by uræmia, the head symptoms being rather comatose in character, than convulsive, as in tubal nephritis; convulsions may, however, occur. If the causes, progress, and essentially incurable nature of granular degeneration differ thus widely from those of the preceding disease, an equally marked distinction exists between the condition of the renal secretion in the two affections. In the early stage of granular degeneration the urine is much increased in quantity, is light-coloured, and of a rather low specific gravity; and it is only in an advanced stage that the amount is greatly reduced. The urea, uric and phosphoric acids are reduced, but not to a great extent until the urine has become scanty, and the end approaches. Albumen, in some cases—as in one recently published by Dr. Murchison—does not appear throughout the course of the disease; or, if present, is variable in quantity, and often exists in small amount only. Hematuria, to an extent appreciable by mere inspection, does not occur in more than ten per cent. of all cases. Casts of the tubules may be absent in the early stages; they can usually be found later, and are present in two forms: hyaline casts, which occur in other conditions of the kidney, and a variety of granular casts which Dr. Dickinson regards as characteristic of granular degeneration, and describes as of coarse granular texture, large, opaque, and conspicuous, and probably consisting of disinte-

grated fibrin; whereas those in tubal nephritis are composed of altered epithelium. There is very little free renal epithelium in the urinary sediment. There is no doubt that in many cases, by careful and prolonged observation of the changes in the urine, a diagnosis may be made between the various forms of chronic renal disease; but we apprehend that the experience of most microscopists will confirm the statement, that the characters of the casts found in the urine do not constitute a reliable guide save in rare instances.

The incurable nature of granular degeneration of the kidneys is fully admitted by the author. He recommends that the *treatment* should be directed to securing a suitable climate for residence—to promoting the activity of the skin by the use of the hot-air or Turkish bath, and to the administration of some preparation of iron, preferably one of the diuretic salts, as the acetate. The food should be as non-nitrogenous as is consistent with the proper nutrition of the patient, in order to avoid any tendency to the accumulation of urea. Alcohol, in moderation, is not productive of any harm. If dropsy occur, diuretics, among which decoction of scoparium is recommended as most effective; purgatives and diaphoretics must be employed. In the treatment of the cerebral symptoms which so frequently supervene, attention is called to the fact that there is less tendency to anæmia in this affection than in other forms of renal disease, and accordingly vigorous purgation, or even free abstraction of blood, are recommended—though this latter measure is to be used only in few cases.

In the succeeding chapter the author begins the discussion of the third division of his subject—that form of renal disease depending upon the deposit of a peculiar material which has at different times received the names of waxy, lardaceous, amyloid, or albuminoid matter. As this is the portion of the work we are considering which has most claim to originality, and as the author takes up the discussion at a point only reached by the recent investigations of several observers, it may not be amiss to supplement our synopsis of his views by a brief sketch of the previous position of the question.

The first recognition of the so-called amyloid disease does not date further back than 1832, when Hodgkin, and a little later, Bright and Carswell described it—regarding it, however, as a form of malignant disease. Subsequently Rokitansky asserted that it was a species of fatty degeneration. And more recently—indeed until within the last ten years—it was considered, as by Budd, Bennett, and Gairdner, as an albuminoid degeneration. About this time, however, the theory was advanced by Virchow, that the morbid material deposited in these cases is starch-like in nature; and consequently he bestowed upon the disease the term amyloid degeneration. The peculiarity of this deposit, according to him, is that it never becomes blue under the action of iodine alone, but assumes a peculiar yellowish-red—which however, it is true, has in many cases a tinge of reddish-violet. “On the other hand, it displays pretty regularly either a real perfectly blue, or violet colour, when the application of iodine is followed by the very cautious addition of sulphuric acid.” Thus he considered this substance less nearly allied to starch, properly so called, and more akin to cellulose, though it is also distinguished from the latter by the fact of its becoming coloured upon the application of iodine alone.¹

¹ Cellular Pathology, Chance's Trans., p. 414.

Finally, in opposition to these views of Virchow, the theory was advanced by Meckel, that this form of disease is due to the deposition of a peculiar fat, more or less nearly identical with cholesterine, and hence he suggested that the morbid condition should be called the cholesterine disease. This last view, it will be noticed, approaches the one formerly held by Rokitansky and others. In this position, then, the question remained, the opposing theories being maintained by their separate proposers and a few adherents; but a large majority accepting, from the large weight of Virchow's authority, and the positive nature of his observations, the view that the morbid deposit is an amyloid material. Quite recently, however, the whole subject has been very carefully re-examined, especially by Pavy¹ and Dickinson,² from whose memoirs much of the present description is derived. In the first place, it has been determined by elementary analysis by Schmidt, Friedreich and Kekule, Pavy and Odling, that the so-called amyloid substance is, in reality, as highly nitrogenized as albumen itself. Still further, it has been a matter of frequent experience with numerous observers, that in cases where the organs were undoubtedly the seat of this peculiar deposit, iodine and sulphuric acid would not produce the peculiar colour changes described by Virchow.³

On the other hand, as stated by Dr. Pavy, on applying to the cut surface of a so-called amyloid organ, a strong solution of iodine, the parts pervaded by the deposit gradually assume a dark-brown colour, whilst the healthy tissue remains only slightly tinged by the reagent. The addition of sulphuric acid, instead of developing a blue colour, produces blackening of the tissues, from a precipitation of iodine from the iodide of potassium used in the solution. Once more, Dr. Pavy has ascertained by experiment that if either tallow, lard, or stearine are treated with iodine and subsequently with sulphuric acid, a beautiful colour, varying between violet blue and purple will be developed. Cholesterine is not affected by iodine alone, but the subsequent addition of the acid brings out a deep blue tint. It is therefore possible that the presence of fatty matter may in some amyloid organs have given rise to a blue colour; but the really characteristic reaction with iodine, as mentioned above, is preserved after all the fat has been extracted from the affected organ.

It appears, consequently, that not only were Virchow's observations, as to the production of the starch reaction, and his inferences therefrom, fallacious, but that elementary analysis proves that nitrogen is present in large amount in the so-called amyloid material. It is evident then that this peculiar deposit can be neither amyloid nor fatty in character, but that it is, in all probability, either albuminoid or fibrinous.

¹ F. W. Pavy, M. D., on so-called Amyloid Degeneration, *Guy's Hosp. Rep.*, 1864, p. 315.

² W. H. Dickinson, M. D., *Med.-Chir. Trans.*, vol. L., 1867, p. 39.

³ We have frequently observed this during the past few years, and, while writing this review, have had the opportunity of carefully testing the organs in two cases of very extensive and advanced albuminoid degeneration, and found that iodine and sulphuric acid gave no amyloid reaction, though iodine alone developed in great perfection the peculiar effect above noticed. Indeed, the only recent observer we are familiar with who upholds Virchow's statement is Hayem (*Comp. Rend. de la Soc. de Biol.; Syd. Soc. Biennial Retros.*, 1865-6, p. 176), who, in speaking of "amyloid degeneration of the alimentary canal," says that "on treating the patches with water containing iodine, the whitish lines immediately assume a brownish-red colour, which is changed to a bluish-violet on the addition of a little sulphuric acid."

In the paper already referred to, Dr. Dickinson has carried the inquiry one step further, and appears to have determined the actual character of the substance to be a form of fibrine which has been deprived of its alkali. The following conclusions show in a concise form the various steps of the argument:—

1. The morbid deposit loses its characteristic reactions when it has been allowed to absorb potassa or soda, although the affected tissue may be dried, boiled, soaked in alcohol, in strong acids, or in caustic ammonia, and still retain it.

2. Organs containing this deposit yield on analysis a smaller proportion of the alkalies than do the same organs in a state of health. This reduction is so great in well-marked cases, that the affected structure has a decidedly acid reaction.

3. Ordinary fibrin or albumen can be made to exhibit all the peculiarities of so-called amyloid tissue by depriving them of alkali by artificial means.

As an additional test for this morbid deposit, no less striking than iodine itself, Dr. Dickinson recommends sulphate of indigo. If healthy tissue be soaked in a weak solution of this, it assumes a blue colour, which after a time fades into a pale greenish-blue. Portions of organs affected with this disease, however, retain a deep brilliant blue colour. "The power of decolorizing sulphate of indigo is known to belong to the caustic alkalies; and under the circumstances described the destruction of colour appears to be due to free alkali contained in the healthy tissue; while the colour is retained in the morbid deposit, owing to the absence of this component." It has long been observed that the tendency to this form of disease appears in various cachectic states of the system, especially in chronic tuberculosis, syphilis, and chronic bone disease. Nearly all such cases are attended with more or less profuse suppuration; and indeed of 109 cases of so-called amyloid disease in which the antecedent history could be traced, Dr. Dickinson found that in 83, or more than three-quarters, there had been undoubted suppuration, while in the remaining 26 the preceding disorders were of such a nature as to make it probable that in the greater number there had been at some period a discharge of pus. Regarding then the so-called amyloid deposit as dealkalized fibrin, and analysis having shown that pus is an albuminous fluid containing a large amount of potassa and soda, he views the morbid deposit as of the nature of a residuum, occurring in cases where the system has been drained by an alkaline albuminous discharge, and the blood consequently contains an excess of fibrin with a deficiency of alkali. He also discards the various names under which this disease has been known, and suggests the term "Depurative," as significant of the process which is its most frequent cause. He argues that "under this designation the false conceptions would be avoided which attach to the phrases by which the process has been hitherto described, and a clear assertion would be made of the great practical truth that in all cases of protracted suppuration the deposit in question is a probable contingency." He himself adds in a foot-note that "it has been objected to this word, that depurate is already in use in the sense of purify. This, however, appears to be of small consequence, since no confusion is likely to result. The fault rests with those who originally permitted the identity of root between the words pus and purus."

It is not, however, quite clear to us that either the reason given in the text, or the scrap of philology in the foot-note, justify the new christening to which he has subjected the disease in question. It is evident that

the term "amyloid" can no longer be defended on any ground, and that the names "waxy" and "lardaceous" are chemically inaccurate, though applicable to the physical appearances of the diseased organs. But it seems to us that the term "albuminoid deposit," though doubtless not perfectly expressive; sufficiently well describes the lesion to justify its retention in use. It is to be remembered that there is no actual proof, as yet, that the morbid deposit is fibrinous rather than albuminoid, since either albumen or fibrin will answer the chemical requirements of the case; nor, although the suggestion is an ingenious one, and certainly well borne out by the clinical history of the disease and the composition of pus, can it be considered as established that the prolonged discharge of pus is the essential cause of the morbid deposit. The author himself suggests that it may eventually be shown that there are diseases which act upon the blood so as to produce the effect of a purulent discharge, and thus occasion the deposit without the medium of suppuration. We cannot, therefore, even on clinical ground, regard the term "depurative" as desirable; and in regard to the philological objection to the word, it may be added that not only is "depurate," as derived from *de* and *puratus*, or *purus*, in common use, but that various forms of the verb, and adjectives and substantives formed from it, are to be met with in innumerable places, both in medical and general literature, as far back at least as Raleigh or Sydenham.

Surely the "*jus et norma loquendi*" may be pleaded by any who prefer adhering to the custom of those who originally admitted this time-honoured word in its proper sense.

Before leaving the general discussion of this subject, we may add that, from the statistics which the author has collected, syphilis does not seem to produce this form of disease, except by causing bone disease or extensive ulceration.

The kidneys are very favourite seats for the so-called "amyloid deposit," and when not attacked first, usually become involved so early in the course of the disease, that the change in their secretion is one of the first symptoms noticed.

When the kidney presents an advanced stage of this alteration, the organ is increased in size and heavy, weighing from 10 to 16 ounces; the cortex is firm, pale, and increased in thickness, and, when no fatty tendency co-exists, often has a pinkish or gray translucency. The capsule is adherent, and often thickened. The external surface is smooth and pale, though dotted with stellate vessels or irregular red patches. According to Dr. Dickinson, the morbid material tends to contract, and in a very advanced stage the surface may become uneven, presenting large, smooth elevations, or irregularly deformed in some places.

There is not, however, seen as a consequence of this form of disease the regular covering of uniform small granulations, characteristic of granular degeneration. Cysts are often found, as in the other form of intertubular disease, and are here due, likewise, to the contraction of the morbid deposit, constricting the tubules and leading to a cystic dilatation of their upper portion or of the capsule of the Malpighian tuft. In all stages, iodine furnishes the characteristic reaction; early in the disease merely dotting the Malpighian bodies, while later, brown lines become visible in the cones, and finally almost the whole surface of the section gives the characteristic colour. Here as elsewhere the change first affects the minute arteries, then leads to an intertubular effusion and finally induces changes in the tubules which cause them to become plugged up. The vessels of the Malpighian

tuft are first affected, and subsequently the straight vessels between the tubes. The material poured out between the tubules has at first a closely nucleated structure, like that presented by new fibrous tissue or some varieties of fibro-nucleated growths. The same material also escapes from the exposed vessels of the Malpighian tufts and appears in the tubes and in the urine in the form of casts, which occasionally present the characteristic reaction with iodine. The tubes themselves remain rigidly open, and the epithelium holds to the wall with unnatural firmness, as though the wall were thickened, and the cells partially fused upon it. The epithelium is rarely much altered, though occasionally the cells are fatty or distorted in shape. Hence kidneys in this state of disease furnish the most typical demonstrations of the renal tubules. The tubes often contain fibrinous plugs, or, as already stated, are transformed into cysts.

In explaining the mechanism of the disease, the author apparently regards it as a purely mechanical process. He states that the dealkalized fibrin is deposited in the smallest arteries, where the force of the circulation is diminished and the blood current retarded. This process, though it thickens the walls, renders them more permeable and hence the liquor sanguinis, holding in solution albumen and the modified fibrin, freely exudes into the tissues. There appear to us, however, some difficulties in accepting this purely physico-chemical explanation of the disease, and it may be doubted whether its essential nature does not rather consist in a morbid alteration of the cells, first of the middle coat of the minute arteries, and afterwards, as in granular degeneration, of the intertubular tissue.

A clear and concise clinical history of the disease follows, illustrated by numerous well recorded and very typical cases. The affection is most frequent between the ages of 20 and 30 years; its period of greatest mortality being later than that of tubal nephritis, but earlier than that of granular degeneration. Dropsy, both in the form of œdema and ascites, is usually present, but the pleura and pericardium generally escape. There is a marked tendency to inflammatory complications, especially pneumonia and pleurisy; but, on the other hand, cerebral symptoms are rarely developed, occurring but six times in a series of forty-eight cases, in which the renal disease was marked. Vomiting and diarrhœa are of very common occurrence, often depending upon albuminoid degeneration of the alimentary canal. Indeed diarrhœa, together with the inflammatory complications before alluded to, constitute the chief causes of death. There appears to be no tendency to atheroma of the vessels, to hypertrophy of the heart, to extravasation of blood in the brain, or to affection of the retina.¹

The disease is essentially chronic, though it not unfrequently remains latent until a few weeks or months before death. One case however is narrated in which the patient, a vigorous young man, died of pyæmia on the twenty-first day after amputation of the thigh, and at the autopsy the kidneys were found the seat of positive albuminoid disease.

The condition of the urine resembles, in many particulars, that in granular degeneration. The quantity is much increased at first, but subsequently diminishes, comparatively rarely, however, falling below twenty fluidounces. The increase in quantity persists even when œdema is present, and the

¹ Dr. Grainger Stewart, in the *Med.-Chir. Rev.* of January, 1868, p. 201, quotes a series of cases of albuminoid degeneration in which hemorrhage was observed in the spleen, in the skin, in mucous and serous membranes, in the substance of muscles, in the mucous membrane of the intestines, and perhaps in the kidney also.

coexistence of these two conditions is regarded by the author as characteristic of this form of renal disease. Blood is rarely present, but albumen appears early, and gradually increases until it is sufficient to form a bulky coagulum. The sp. gr. is reduced to from 1015 to 1006, or even lower; the acidity is diminished, and all the other elements are reduced in amount. The urea, however, is not lessened to the same extent as in the other forms of renal disease. Casts appear at an early period, and are usually present in abundance throughout the course of the disease. They are of the fibrinous and epithelial forms, and present nothing peculiar, save in the rare cases, when they yield the characteristic reaction with iodine. The diagnosis then chiefly rests upon the antecedent history of the case, the coexistence of dropsy and increased secretion of urine, the fact that the kidneys rarely remain the only organs affected, but that the liver and spleen ultimately enlarge, the frequency of diarrhœa and the rarity of cerebral symptoms.

In regard to the *treatment*, the author recommends that, when possible, the cause should be removed; but that if it be impossible to check the drain upon the system, attempts to counterbalance its effects should be made by administering an animal and albuminous diet, conjoined with the internal use of alkalies. In addition to this, special symptoms must be palliated, the dropsy and diarrhœa combated by suitable means, and iron and cod-liver oil given to remove the anæmic and cachectic state the patients are usually in. If there be a syphilitic taint, iodide of potassium or iodide of iron may be conjoined. It is evident that this new view of the origin of this form of renal disease, if substantiated, would have a most important bearing upon surgical operations. It has long been generally understood that the existence of renal disease, as manifested by the presence of albumen and tube-casts in the urine, constitutes a most grave contraindication to the performance of any serious operation. In regard to lithotomy, this is, indeed, specially true, since in such cases albuminuria but too frequently indicates a suppurative form of nephritis, with actual destruction of the tissue of the kidneys. The existence, however, of granular degeneration or of chronic tubal nephritis would also be regarded as a most unfavourable complication. But if it be ultimately shown conclusively that the albuminoid degeneration depends essentially upon purulent discharge, this form of renal disease will have a very different significance. It cannot, indeed, be hoped that those portions of tissue which are permeated by the new deposit, can ever be fully restored to health, but it is quite possible that, if the cause be removed, the disease will not progress further. Although therefore its presence would, of course, be unfavourable to the success of the operation, it would, to a certain extent, encourage its performance. And further, as Dr. Dickinson argues, if in any case of chronic bone disease, a careful examination of the urine reveals that the kidneys are undergoing this change, it would be prudent to avoid any of those conservative operations which necessitate a long and exhausting process of repair, and to resort rather to amputation.

In Chapter XIV. is presented a clear and concise comparative view of the three forms of renal disease discussed in this volume, illustrating statistically and by diagrams the differences which exist between them, both in causes, symptoms, complications, and modes of termination.

The state of the blood in albuminuria is treated of briefly in the following chapter, and a few of the most authoritative analyses of the blood in

this disease are quoted, as evincing the general law that in albuminuria, the albumen and corpuscles of the blood are diminished, while the water, fibrin, salts, creatine, creatinine, and extractive matters are increased. Urea and uric acid are superadded. These statements hold good in all forms of albuminuria. Undoubtedly much remains to be learned, especially as to the varied degree of these alterations in the different forms of renal disease. As yet, one of the most interesting generalizations which can be made from the facts already known is, that "the general condition expressed by the word *uremia*, must be held to imply nothing more specific than that the blood is altered by the presence of materials which, in their own shape, or under another guise, ought to have passed out by the kidneys."

It is customary to refer a large share in the production of renal disease to the excessive use of alcohol, but Dr. Dickinson has been led, from a careful investigation of the subject, to doubt the propriety of this. He presents some interesting statistics in regard to this question, which have been obtained by an examination of the kidneys of patients dying with *delirium tremens*, and from the records already published of the post-mortem appearances of the bodies of persons who had been notorious drunkards, and who met a sudden death by accident or suicide; and it appears from these that so far from intemperance being a very frequent cause of renal disease, the kidneys participate but slightly, compared to the liver, in the injurious effects of an excessive use of alcohol. Granular degeneration, indeed, appears, from the author's table, to be absolutely less frequent after *delirium tremens* than when death has resulted independently of alcoholic poisoning. Alcohol, it is true, frequently causes an increase of oil in the renal epithelium, and in some cases gives rise to changes in the tubular structure which indicate an inflammatory or catarrhal condition. These statements are corroborated by the reports of the Registrar-General, which have enabled the author to compare the number of deaths due to alcohol and renal disease respectively, in various parts of Great Britain. It appears from this comparison that renal disease is absolutely more common in the sober agricultural districts than in large towns. We are, however, prevented by want of space from commenting on these conclusions, which are certainly not in accordance with our preconceived views.

We have already referred to the great climatic law, that renal disease is most frequent neither in arctic nor tropical climates, but in those parts of the temperate zone where the most marked and sudden variations in temperature occur. In such places the functional activity of the kidneys is very great, and owing to the intimate relation subsisting between them and the skin, the rapid changes in the circulation of the surface induce frequent attacks of renal congestion, which but too often pass into a condition of fully-developed and intractable inflammation. Dr. Dickinson has illustrated this in an interesting manner by statistics drawn from the Registrar-General's Reports, and from the Army Medical Reports. Want of space, however, forbids us to quote any of the details, from which it appears that not only does this general law hold good in regard to countries widely separated from each other, but that its working may be traced with equal certainty within the limits of so small a country, geographically considered, as Great Britain. This is well shown, for instance, by comparing the east coast with the west. On this latter coast, where there is scarcely heat enough in summer to ripen wheat, but where the winters are warm from the influence of the Gulf stream, so that a very

uniform temperature prevails throughout the year, renal disease is not one-half so frequent as on the eastern side of the kingdom, where the weather is both colder and hotter than on the Atlantic shore, and undergoes much larger and more frequent variations. It does not, however, appear that there is any direct connection between the humidity of the air and the frequency of renal disease. It is, of course, evident that the influence of these atmospheric conditions, does not affect the so-called amyloid degeneration of the kidneys, which is scarcely a primary disease, but owes its origin to various constitutional causes. The practical inference to be drawn from these facts is obvious, and the advice given by the author is to be highly commended. He urges that in granular degeneration, which appears to have a close dependence upon atmospheric influences, and where the structure of the organ is invaded by slow and often hesitating approaches, a warm and constant climate should be sought, "where the genius of the place is opposed to the progress of the complaint."

In concluding this notice we must again repeat our sense of the value of the work we have been discussing. Without pretending to produce an exhaustive treatise, the author has combined a clear and fair summary of the facts generally received in regard to renal disease, with a full and valuable clinical description of its various forms. In addition to this, he has given the most complete account of the so-called amyloid degeneration as affecting the kidneys, and has made out a strong case in favour of the theory he advances to explain its nature and origin. It is impossible, however, to reproduce here the features which give to the work much of its value—the full statistical tables, the numerous well-reported cases, and particularly the admirable illustrations both of the gross and microscopical appearances in the various forms of renal disease. These are executed in a high style of chromo-lithographic art, and combine all that can be desired in medical illustrations.

The book is handsomely printed, and the text, though exhibiting occasionally peculiarities of phraseology and style, is unusually free from inaccuracies.

W. P.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XVII.—*Pennsylvania Hospital Reports*. Edited by J. M. D'ACOSTA, M.D., and WILLIAM HUNT, M. D. Vol. I. 8vo. pp. 420. Philadelphia: Lindsay & Blakiston, 1868.

"PENNSYLVANIA HOSPITAL REPORTS!!—at last! and that only upon attaining to the ripe age of one hundred and twelve years!"

Such is the opening paragraph of the first article in this volume, entitled *The Pennsylvania Hospital, and Reminiscences of the Physicians and Surgeons who have served it*, from the pen of one who speaks by the card, Charles D. Meigs, M. D., formerly one of the Physicians to the Lying-in Department of the Hospital, Emeritus-Professor of Midwifery in the Jefferson Medical College, an author of world-wide celebrity, a man whose name is a household word with the American medical profession, a facetious writer, and one of the most humane, kind-hearted, and excellent physicians and obstetricians of the age. "*Clarum et venerabile nomen gentibus, et multum nostræ quod proderat urbi.*" Of the many papers in this book, there is none more likely to be read with a deeper interest than this, so characteristic of its distinguished author. We doubt if there be anything in Cooper, Irving, Scott, or Dickens, more entertaining than this article. It possesses all the charms of a romance. The author writes with the pen of a master, so honestly, so graphically, and so forcibly, as to make one feel the truth of everything he utters. His delineations of the physicians and surgeons who have served the Pennsylvania Hospital are life-like portraits; in fact, every scene which he describes juts out in bold and prominent relief. "Its corner-stone was laid by the honourable hands of Franklin, with prayers and blessings." The year was 1755. The tallow-chandler's son, the printer, the lightning robber, the ambassador, the philosopher, crowned by kings, laid the corner-stone! charitable hands reared the superstructure! great physicians and surgeons, endowed with the power of healing, cared for its inmates! William Penn—he of the woods—furnished the name! Kuhn and Rush, Wistar, Physick, James, Dorsey, Barton, Hewson, Parrish, Hartshorne, and Pepper are honoured names in medicine, whose mantle has fallen worthily upon their descendants of the present medical and surgical staff of this noble institution, whose contributions make up so large a portion of the volume before us.

The name of Rush, says our venerable author, was a sort of myth in my young ears. "When, in the autumn of 1812, I first entered his lecture-room, in the old University building, on Ninth Street, I was enrapt: his voice, sweeter than any flute, fell on my ears like droppings from a sanctuary, and the spectacle of his beautiful radiant countenance, with his earnest, most sincere, most persuasive accents, sunk so deep into my heart that neither time nor change could eradicate them from where they are at this hour freshly remembered. Oh! but he was a most charming gentleman! a 'grave and reverend, and potent signor' in the scholar class of mankind!"

Physick, like his master John Hunter, was a model of exactness and certainty. "I never saw a man who knew so thoroughly well all that he knew. It seemed as if his science and art were ledgered in his brain, so that he could turn on the instant to page and line. Dr. Physick's service in the house was continued during more than twenty-two years, from 1794 to 1816, when he resigned his office. His manners were to the last degree dignified and elegant, and as he still wore his hair powdered and clubbed, he bore about him a sort of traditional look, which added to the respect which everywhere, in public and private, greeted him, always reverently. In the midst of a crowd of students more than

five hundred in number assembled from all quarters of the compass, impetuous, ingenious hot heads from the Carolinas, restless Georgians, bold sons of Kentucky, and buckeyes from the northwest, or the graver students from the north, the moment the Professor entered the lecture-room, all was hush, with a general pleased expression murmured all over the amphitheatre, 'and ear and eye attentive bent' to the mellifluous tones of his voice, or the most admirable illustrations of surgical processes that he so profusely supplied. He was a man like a statue of marble but animated by a promethean light and warmth."

Dorsey, the nephew of Physick, was a great favourite with his pupils, and a man of uncommon personal popularity. He wrote the first work on surgery ever published in this country, a work for the materials of which he was largely indebted to Boyer, Desault, Pott, Benjamin Bell, and other writers of the latter part of the last and the early part of the present century. Dr. Meigs's love and respect for this work show the deep and abiding effects which are sometimes made upon a great man's mind by early impressions. "We early received Dorsey's Surgery as a man takes his wife, for better, for worse, in sickness and in health, until death doth us part; and though our golden wedding is already past and gone, we adhere to our engagement then and there."

Dr. Thomas T. Hewson, with whom Dr. Meigs enjoyed a long and friendly acquaintance, was "one of the good furtherers of our house's name and fame." Dr. Joseph Hartshorne was a "bold, highly instructed, and most dexterous surgeon." Joseph Parrish was "a model man from the society of Friends." Dr. J. Rhea Barton was for upwards of thirteen years "the ornament and pride of the surgical department of the Hospital;" and Dr. William Pepper, "a man born for the place," a name that cannot be mentioned without praise, was "extensively known as the admirable clinical lecturer at the Hospital for near twenty consecutive years, and subsequently as Professor of the Practice of Medicine in the University of Pennsylvania."

Before we enter upon an analysis of the contents of this volume, it is proper we should correct an error into which the editors have inadvertently fallen in their statement that this is the only hospital in this country that has sent forth, under its own seal, the experiences gained within its walls. This was not so by nearly half a century. "Pereant illi qui ante nos nostra dixerunt." The first publication of the kind in the United States appeared in 1818, under the title of "*The Medical and Surgical Register: consisting chiefly of Cases in the New York Hospital.*" It was edited by Drs. John Watts, junior, Valentine Mott, and Alexander H. Stevens. Only two parts were issued, when the work was suspended. A large share of the volumes was taken up with the recital of Dr. Mott's surgical exploits, among which the famous one of the ligation of the innominate artery occupied a conspicuous place. The Dublin Hospital Reports and Communications, of which only five volumes were ever issued, made their appearance in the same year. St. Thomas's Hospital Reports were commenced in 1835, and were soon followed by Guy's Hospital Reports, both of which are among the most valuable contributions to medical and surgical science of the age. The London Hospital, St. Bartholomew's Hospital, and St. George's Hospital have recently imitated the example of their elder sisters, and we are glad to learn that the physicians and surgeons of the Bellevue Hospital of New York will soon follow in the wake of the Pennsylvania Hospital.

The volume before us contains twenty-three papers, illustrated by two lithographs, and twenty-seven wood-cuts, of the contents of each of which excepting the first, which has already been sufficiently noticed, we furnish a condensed analysis.

II. *Laceration of the Female Perineum: Its History and Treatment.*—Dr. D. HAYES AGNEW, in this paper, which is illustrated by fourteen wood-cuts, after giving a brief description of the anatomy of the parts, considers the causation, degrees, results, nature of the deformity, prevention, and history of the cure of lacerated perineum; points out the proper time for operation, along with its indications and contraindications; gives judicious advice as to the preparation of the patient; and, finally, describes an operation to which he has appended his name. This having been eminently successful in practice, and being as

simple as it is efficient, we shall confine our analysis to the main points insisted upon by its deviser.

The bowels should be emptied thirty-six hours before the operation by a mild cathartic, after which a grain of opium is to be administered to render them quiet. The parts having been divested of hair, and the patient placed in the lithotomy position, the surgeon, seated in front of the perineum, seizes with the forceps one side of the laceration, and commences its denudation from behind forward. The paring should not extend deeply, and, when completed, should be one inch broad, and include a little of the labium and the vaginal mucous membrane. The opposite side is treated in the same manner, when the recto-vaginal septum is rendered tense, and its surface freshened to the extent of three-quarters of an inch. The bleeding having been controlled, the incisions are next to be approximated by deep and superficial silver sutures, commencing with the former, the first being introduced behind, or next to the rectum. Three or four of these will usually suffice, care being taken to insert them one inch exterior to the denuded border, and carry them so deeply as to have them include a little of the mucous membrane of the vagina. The superficial stitches, placed intermediate to the others, are inserted three-eighths of an inch from the edges of the wounds, and penetrate the skin and a little into the cellular tissue. The deep sutures are secured by shot clamped upon them, while the superficial ones are twisted in the usual way. To give additional support, a strip of adhesive plaster, two inches and a half broad and twelve or fourteen inches long, is placed across the nates, and the woman put to bed, with the knees bound together by a roller, a napkin being interposed to prevent excoriation. When the recto-vaginal septum is torn to any considerable extent, its borders should be freshened, and approximated by silver sutures, previous to the restoration of the perineum.

In reference to the after-treatment, it is advised that the diet be bland, that the bowels be kept at rest by small doses of opium, and that the urine be drawn off every five or six hours. The deep stitches are to be removed, in the reverse order of their insertion, at the expiration of seventy-two hours, the one next to the rectum, however, being permitted to remain another day, if it retains its hold firmly. The superficial sutures are to be withdrawn on the seventh day. On the third day, a tepid solution of the permanganate of potassa should be thrown upon the parts by means of a syringe, and this should be repeated daily. The bowels may be opened gently on the twelfth day, when they should again be locked up for one week, to permit the more secure consolidation of the parts. If everything has progressed favourably, the patient may be allowed to sit up after the sixteenth day.

The operation of Dr. Agnew has been practised in ten instances, all of which were perfect successes. It differs from the procedure of Mr. Baker Brown, of London, in that the sphincter ani muscle is not divided, and the quilled suture is replaced by the interrupted silver suture.

III. *On the Morphological Changes of the Blood in Malarial Fever, with Remarks upon Treatment.* By J. FORSYTH MEIGS, M. D., assisted by EDWARD RHODES, M. D., and WILLIAM PEPPER, M. D.—This elaborate paper is based upon one hundred and seventy-six cases of malarial fever, either of the intermittent or the remittent type, in one hundred and fifteen of which the blood was examined microscopically during life, with the view of determining the diagnostic value of certain alterations of its elements, as indicated especially by the presence of pigment material, which is rapidly and largely produced during the progress of miasmatic fevers. The appearances presented by post-mortem examinations of six fatal cases, all that occurred, are minutely portrayed; and, in addition to some highly interesting remarks on the connection of this pigment matter with intermittent and malarial affections, along with some considerations on the physical characters of malarial pigment, which do not differ materially from those advanced by Professor Frerichs, the details of a number of cases are given, which are to a certain extent typical of the different forms of malarial disease, and at the same time illustrate some important points in treatment.

Dr. Meigs is convinced that the diagnosis of malarial fevers, except in the most aggravated cases, cannot rest upon an examination of blood from the peri-

pheral vessels, as, for example, those of the finger, since "in only two patients was the blood obtained during life seen to contain not only grains and granules, but pigment cells also." Notes were, however, made of the appearances of the red and white corpuscles; and, from a comparison of one hundred and fifteen microscopical examinations with post-mortem appearances, the author deems himself justified in the following conclusions:—

"1. That in examining blood during life with a view to determine the presence or absence of pigment matter, great care is necessary to exclude all foreign particles from the epiderm or elsewhere.

"2. That pigment may exist abundantly in the visceral capillaries, and in the contents of the portal vein and other large vessels, when blood obtained from the derm and subcutaneous tissue does not exhibit it.

"3. That only in cases of excessive pigment development will granules and pigment cells be visible in such blood.

"4. That in the acute stages of malarial fever, the red blood corpuscles are darker than natural, appear soft, are sometimes crenated, readily yield their colouring material when mingled with water, and are disposed to mass irregularly rather than to form distinct rouleaux.

"5. That as the disease progresses they are rapidly and very greatly diminished in number, become pale, lose their tendency to aggregation, and either remain isolated or arrange themselves in imperfect columns.

"6. That in the early stage of the disease, the number of the white corpuscles is not perceptibly increased, and that later their increase, though very irregular, is always observable; from six to thirty-five appearing in the same microscopic field which presents in normal blood only two or three.

"7. That excessive anæmia, with a large increase in the number of white corpuscles, may exist in malarial cases without marked enlargement of the spleen.

"8. That no other morphological alterations are to be detected except, as also in some cases of severe anæmia from other causes, certain colourless, highly refracting granules, free or in membranous-looking fragments, appearing like white corpuscles broken up, and giving to portions of the field a filmy, clouded aspect."

The author calls attention to the occurrence of an herpetic eruption about the mouth and nose, which he considers of decided diagnostic value as a sign of malarial disease. It was present in 73 per cent. of the cases, and was nothing more than ordinary herpes, in the vesicular form, seated usually in the upper or lower lip, or about the *ala nasi*. Being extremely rare in typhoid fever, its presence may afford material assistance in the discrimination of malarial fever from the former affection. It occurs sometimes in the typho-malarial of our late war, and it is also often seen in epidemic cerebro-spinal meningitis; but it is more liable to appear in this latter disease upon the forehead and cheeks than about the mouth and nose.

The treatment pursued was of a very simple kind; rest, a sustaining regimen, with stimulants whenever debility was marked, and the use of quinine from the very first day, being the three grand points which are particularly insisted upon. Absolute rest in bed was enforced in all severe cases, in all which failed to yield readily to quinine, and in all cachectic conditions. The patients were not allowed to rise so long as the fever presented the remittent type, nor during the paroxysms of intermittent fever.

The regimen was that generally adopted in typhoid states, and consisted of liquid food, as milk, beef or chicken tea, and sometimes bread. In ordinary cases three ounces of milk punch were given every six or eight hours, and beef tea with bread at dinner, and bread and milk morning and evening. In severe remittent forms, when there was marked debility, the beef tea and milk punch were administered from six to twelve times in the twenty-four hours.

A solution of four grains of quinia was given every hour, or every two hours, until sixteen or twenty grains had been taken, and these doses were continued until the fever was broken up, or the paroxysms arrested, when one or two doses were administered daily. When the bitter taste caused emesis, the remedy was given in pill form. In two cases the irritability of the stomach was so great

that it was used by the hypodermic method, and in one of these large abscesses and sloughs were produced.

As soon as the periodic element was thoroughly subdued, five grains of the ammonio-citrate of iron, dissolved in half an ounce of a mixture of fluid extract of gentian, lavender compound, and water, were administered every eight hours, until the strength of the patient was well restored.

Venesection was not resorted to; but, in a few cases, from four to six ounces of blood were taken from the back of the neck.

Drastic cathartics were not allowed, the bowels, when decidedly torpid, having been opened by a mild purge.

In concluding this portion of his paper, Dr. Meigs calls particular attention to the non-mercurial plan of treatment adopted. In all the cases not more than twenty blue pills were used, and then only when the skin was very sallow, and the bowels obstinately constipated. The following extract expresses his views on this point, and will be read with interest by the physicians of this country:—

“I believe that the old American system of giving calomel and jalap, or calomel, in ten or twenty grain doses, as a cathartic, or in one or two grain doses, every two or three hours, as a cholagogue or alterative, is positively dangerous from the debility which they cause, and from the gastric and intestinal irritation which they sometimes set up. To say the least, they are unnecessary, and any one who has seen the gastric distress, intestinal irritation, or the constitutional poisoning which mercury not unfrequently induces, will be glad to know that he may, with a good conscience, dispense with its use in so severe and dangerous a disease as this of malarial fever often is. To know that 176 cases of malarial disease, many of them very severe in their type, were treated almost without mercury, with only six deaths, is surely proof enough that this drug is not essential. And when it is recollected that of the six deaths, one occurred in an hour and a half, and another in twenty hours after admission, one of dysentery after recovery from the fever, and of one of acute tuberculosis, leaving only two deaths in 172 cases fairly ascribable to the malarial disease after proper treatment, it must be plain that mercury, except in very small doses, may be safely dispensed with.”

IV. *On Acupressure.*—Dr. ADDINELL HEWSON, the author of this paper, is, if we are not greatly mistaken, the only one of the Surgeons to the Pennsylvania Hospital who reposes much faith in acupressure as a hæmostatic agent, of which he is an able defender and an earnest advocate. He has employed it exclusively for the past three years in a great variety of cases, and is satisfied that it possesses the advantages, over the ligature, of reducing the risks to the lives of patients and the time required for their recovery. He says:—

“Acupressure, as a substitute for the ligature in arresting surgical hemorrhage, originally proposed by Professor James Y. Simpson, in 1859, is steadily gaining advocates, and will, I believe, be eventually preferred by those who may give it a thorough trial. I have now had opportunities of testing it on all the large vessels of the extremities, and with me its employment has always been pre-eminently satisfactory. In parts where the ligature has often proved so unsatisfactory as to make some more effectual means of permanently closing the bleeding orifice a great desideratum, as in the axillary artery, palmar, or plantar branches, or in other parts where the vessels give off branches close above the point at which it is desirable to effect the obliteration of the calibre, this method has been found by me all that could be wished for.”

Dr. Hewson furnishes some data in reference to the pathological mechanism by which arteries are closed when acupressure is used, which refute the theory that the security in this method is merely from the pressure of an internal coagulum. From the specimens, illustrated by three wood-cuts, it would appear that the pins excite increased formative action and an active process of thickening and adhesion of the coats of the vessels, through which their calibre is permanently sealed up.

V. *Statistical Account of the Cases of Amputation performed at the Pennsylvania Hospital from January 1, 1850, to January 1, 1860, with a General Summary of the Mortality following this Operation in that Institution for Thirty Years.* By GEORGE W. NORRIS, M. D.—In the 22d, 26th, and 28th vol-

umes of this Journal, Dr. Norris gave statistical tables of all the capital amputations performed at the Pennsylvania Hospital from 1830 to 1850 inclusive, with the view of calling attention to the great mortality which followed these operations. These tables attracted great notice, and have since been referred to by all systematic writers on surgery. The list now published is a continuation of the former, carried down for another ten years, and drawn up in a similar manner, with a summary appended of the thirty years' experience of the Hospital. The *résumé* we extract entire :—

"From the above table it will be seen that from January, 1850, to January, 1860, there were 228 capital amputations performed. Of these, 173 were cured, and 55 died.

"Forty-three were of the thigh, seventy of the leg, eight of the feet, six at the shoulder-joint, thirty-eight of the arm, fifty-two of the forearm, eight at the wrist joint, two of the hand, and one at the elbow-joint.

"One hundred and forty-six of the 228 operations were primary, being done for recent injuries within twenty-four hours after the occurrence of the accident, and of these 119 were cured, and 27 died; 42 were secondary, of which 27 were cured and 15 died; 40 were for the cure of chronic affections, of which 27 were cured and 13 died.

"Twenty-five of the whole number in the table were done at the joints, of which 23 were cured and 2 died.

"One hundred and seven of the amputations were of the upper extremity, of which 94 were cured and 13 died.

"One hundred and twenty-one were of the lower extremity, of which 85 were cured and 36 died.

"In adding the results furnished in the above ten years to those given in the volumes of the *American Journal* already referred to, for the twenty years previously, we arrive at the following results :—

"Of 428 amputations upon 424 patients, performed during the thirty years from 1830 to 1860, 321 were cured and 103 died; of these, 261 were primary, of which 54 died; 83 were secondary, of which 31 died; 84 were for the cure of chronic diseases, of which 18 died.

"One hundred and ninety-four of the amputations were of the upper extremity, of which 21 died; 234 were of the lower extremity, of which 74 died; 46 were amputations at the joints, of which 6 died.

"One hundred and eighteen of the patients operated on were under 20 years of age, of whom 108 were cured and 10 died; 133 were between 20 and 30, of whom 101 were cured and 32 died; 87 were between 30 and 40, of whom 60 were cured and 27 died; 62 were between 40 and 50, of whom 40 were cured and 22 died; 21 were upwards of 50, of whom 16 were cured and 5 died."

VI. *Physiological Observations and Experiments on a Case of Large Artificial Anus, with an Account of the Surgical and Mechanical Efforts to Cure.* By WILLIAM HUNT, M. D.—A young man was admitted into the Pennsylvania Hospital on the 23d of October, 1865, on account of an artificial anus, the result of gunshot wound, in the right iliac region, one inch within the anterior superior iliac spine, and measuring two inches and a half in its transverse, and two inches in its longitudinal diameter. The portions of the gut involved were the cæcum and colon. Previous to subjecting the patient to a surgical operation, and during the progress of recovery from it, some physiological observations and experiments were made, which seem to demonstrate that, in man, the cæcum and large intestines are merely passive receptacles for the excrement. They appeared to be totally deficient in digestive and absorbent powers, since no effects were produced by medicinal agents applied to them, nor was there the slightest digestive action exerted on pieces of tender meat passed into their interior. The mucous membrane was of a pale pink colour, utterly devoid of common sensibility; and secreted a colourless, limpid fluid, which exuded from all parts in small quantity, and invariably exhibited an alkaline reaction. The opening discharged from five to eight ounces of feces daily, mostly in the form of a soft mass, but sometimes there were lumps of well-formed matter. Their colour and odour did not differ from those of the normal discharges by the rectum. By an ingenious plastic operation, Dr. Hunt was enabled to close the

opening temporarily; but the points of connection of the flaps were gradually broken asunder by the pressure of the intestinal gases, which seems to be a more formidable obstacle to success than fecal accumulation. Attempts were also made to substitute an artificial wall for the natural one, by fitting directly into the gut a section of a very light and smooth cylinder of vulcanized rubber, with its concavity directed inwards. This apparatus was tolerated for a time, but it was finally abandoned on account of the pain and inconvenience which it frequently excited. The man now wears a simple water-bag truss, which retains the feces, until it is removed at daily intervals, when the usual amount passes from the opening.

VII. *Observations of the Action of Narcein.*—Dr. J. M. DA COSTA, in this paper, which, from its negative results, is one of the most valuable in the volume, gives his experience with narcein, concerning the action of which drug it has been extensively claimed that it possesses the anodyne and soporific properties of morphia and kindred preparations, without giving rise to nausea, headache, or constipation. Ten cases are narrated in which a chemically pure article was fairly tested, in all of which its effects were of a very unsatisfactory nature. The following summary embodies the general results arrived at in the investigation:—

“On the skin it produces but little effect, far less perspiration than morphia or the other ingredients of opium. It does not, as a rule, give rise to headache, or to nausea and vomiting, and loss of appetite; but it is an exaggeration to say that these effects do not occur. Moreover, they seem to happen in women more constantly or markedly than in men. It does not constipate, may even relax the bowels. It is not an excitant; yet the face is not uncommonly flushed after its use in decided doses. Scarcely any action on the pupils is observable. No marked influence on the temperature, respiration, and pulse is perceptible subsequent to its employment. So far as noticed it somewhat lowered the temperature, and slightly lessened the pulse; the latter, however, not constantly. No such decided effect as has been ascribed to it on the urinary function was met with. In so far as it was seen to have any action, it seemed to diminish the tendency to frequent urination, rather than to suppress the amount of secretion. And with reference to its soporific and anodyne properties it appeared, in doses in which morphia is prescribed, totally destitute of either; and in larger doses uncertain, and often palpably inert. It does not allay irritation.”

VIII. *Review of the Ligations of Large Arteries at the Pennsylvania Hospital between the Years 1835 and 1868, including several hitherto unpublished Cases, and a Detailed Report of a Ligation of the Left Internal Iliac Artery.* By THOMAS GEORGE MORTON, M. D.—Since 1835 there have occurred in the Pennsylvania Hospital only seventeen ligations of the large arteries, fifteen of the operations having been for the relief of aneurismal disease, thereby showing the rarity during this period in the hospital practice of this city of aneurisms requiring surgical aid.

The common carotid was tied in five instances, respectively for carotid aneurism, aneurism of the ophthalmic artery, varicose aneurism, traumatic hemorrhage, and aneurism of the innominate. The last three perished, the causes of death having been cerebral congestion, recurrent bleeding, and serous effusion in the lungs.

The subclavian was ligated once in the second portion of its course for axillary aneurism. The thread came away on the eighteenth day, and the man made a good recovery.

The common iliac was ligated successfully for aneurism of the external iliac. Dr. Morton took up the internal iliac for gluteal aneurism. The ligature separated on the twenty-second day, and the man returned home in the eighth week. The external iliac was tied in three instances, twice successfully for inguinal aneurism, and once for aneurism of the femoral and profunda arteries. The patient died of peritonitis on the third day.

The femoral was ligated twice for popliteal aneurism, twice for femoral aneurism, once for a pulsating tumour of the head of the tibia, and once for femoral arterio-venous aneurism. All of the cases did well.

The last case operated on was one of aneurismal tumour of the gluteal region,

spontaneous in origin, for the relief of which Dr. Morton successfully tied the internal iliac artery. The patient, a man twenty-four years of age, had suffered for five months from what he supposed to be rheumatism of the left hip, and a tumour had been visible for four months. This gradually increased in size, and measured, on his admission into the hospital, five inches and a half transversely and six inches and a half in its vertical diameter. It had the appearance of a chronic abscess; but distinct expansive pulsation and a bruit were detected. The bulk of the swelling was greatly diminished by pressure, but it speedily filled up when the circulation was unobstructed. The internal iliac was ligated on the 16th of October, and the man was discharged cured, so far as the operation was concerned, on the 11th of December. The tumour, however, had become quite soft, and some fears were entertained of deep suppuration.

IX. *A Case of Aneurism of the Arteria Innominata, Illustrating some Points in Physiology and the Principle of Mr. Wardrop's Operation.* By ADDINELL HEWSON, M. D.—A man, 51 years of age, was admitted into the hospital, in March, 1867, on account of aneurism of the innominate, for which Dr. Hewson tied the right primitive carotid on the 20th inst. The internal jugular vein was also ligated, the thread having been thrown around it in order to draw it out of the way. Seven hours subsequently, the patient was suddenly seized with greatly increased dyspnoea, that symptom having existed before the operation, the tumour was much larger and firmer, and abundant loose mucous rales were perceptible throughout the lungs. On the fourth day, the lungs had become freed; the semicircumference of the aneurism had diminished nearly one-half; it was much firmer; its pulsations were less marked; and the sphygmograph showed that the right radial artery was getting more under the influence of the movements of the blood in the heart and ascending aorta than on the day after the operation. On the sixth day, there was slight bleeding from the internal jugular, from which the thread had separated; and on the following day, the tumour was still diminishing, and no pulsation could be detected. On the afternoon of the tenth day, the tumour was very much distended, and symptoms of asphyxia set in, which gradually increased and carried off the patient on the ensuing morning.

The aneurism was found, post-mortem, to have involved the entire innominate artery and a portion of the upper wall of the arch of the aorta. The clavicle and sternum at their junction were eroded, and the upper opening of the thorax was completely filled by the tumour. The pneumogastric and recurrent laryngeal nerves were severely compressed. When laid open, the cavity of the aneurism was found to be occupied with coagula, the central portion, in area equal to the normal innominate artery, containing, however, dark grumous blood.

In his comments upon this case, Dr. Hewson calls attention to certain phenomena, which possess some value to the physiologist. The most curious were those concerning the pupil of the eye, the contraction of which before the operation was replaced by positive dilatation after it. We have not space to follow the author in his discussion of the theories of the mode of production of the movements of the iris; but we agree with him that this case gives support to the theory that the movements of the pupil are dependent upon the vascularity of the iris.

X. *On the Treatment of Continued Fevers.* From *Clinical Lectures at the Pennsylvania Hospital, Delivered in the Winter of 1867-8.*—In this paper, which is one of the most practical and valuable of all in the volume before us, contributed by Dr. W. W. GERHARD, the classical author upon typhoid fever, the treatment of typhoid, typhus, remittent, and yellow fevers is minutely and amply discussed, and the pathology of these affections glanced at. It is impossible to present our readers with a satisfactory abstract of the paper; to be appreciated, it must be carefully studied. One paragraph, however, will doubtless prove of interest to the numerous alumni of the University of Pennsylvania, who had the good fortune to be guided in their studies by Dr. Wood, formerly Professor of Medicine in that Institution. We refer to the exhibition of turpentine in typhoid fever, of which Dr. Gerhard says:—

"A remedy which has attracted a great deal of attention within the last few years, is the spirits of turpentine. Many medical friends of mine never treat a

case of typhoid fever without administering it, and give it often through a considerable part of the disease. I must confess, from my own experience, I cannot think it of much value. I do not believe it in any case positively injurious, excepting that it may disorder the stomach of the patient, and in that way do mischief; but, in ordinary cases of typhoid fever, I consider it perfectly nugatory. The only instances in which it seems to me to do good are when the disease is nearly ending, and the tongue suddenly cleans and becomes a little dry. Under such circumstances the oil of turpentine may be administered, in the hope of removing this condition of things, in the dose of ten drops, made in a mixture, every few hours. In the little value I attach to the spirits of turpentine, I am sorry that I differ so widely from the opinion of my respected friend Dr. Wood, who attaches so much importance to it."

XI. *A Contribution toward our Knowledge of the Pathological Changes in the Fluorescence of Tissues.* By EDWARD RHOADS, M. D., and WILLIAM PEPPER, M. D.—Not long since, Dr. H. Bence Jones gave an account of the existence in animal tissues of a substance which closely resembled quinia in fluorescence; possessed all its optical qualities; and answered every chemical test for that alkaloid. For this substance he proposed the name of animal quinoidine; and he, moreover, ascertained that the tissues yielded a more intense fluorescence after the administration of quinia. The possible connection of these facts with the pathology and treatment of malarial fever suggested itself to the authors of this paper, who entered upon a series of observations, with the view of determining whether a rapid and marked diminution in the amount of animal quinoidine naturally existing in the tissues might not be an attendant upon the morbid processes of malarial disease.

From twelve carefully-conducted observations, Drs. Rhoads and Pepper conclude that there seems to be a close connection between the diminution of animal quinoidine and malarial disease; but whether such diminution is invariably the result of the action of miasmatic poison in the human body, can, however, only be determined by further investigation. It also appears probable that a short time suffices to effect marked reduction in the normal amount of the fluorescent substance; and it may confidently be inferred that it is not essential for fully-formed febrile paroxysms to occur in order that this peculiar effect shall be produced.

No attempt is made to explain the mode in which cinchonia exercises its curative action in miasmatic disorders, this being deferred until further observations have been made, in order to learn whether it be only in miasmatic affections that animal quinoidine is materially diminished. Examinations of the blood and tissues in many other pathological conditions have been commenced; and, from the reputation of the authors as careful, accurate, and conscientious observers, we await with interest the publication of any new facts that they may develop.

XII. *Case of Penetrating Wound of the Skull, in which the Ball entered the Brain, terminating in Recovery; with Analyses of similar Cases.* By T. H. ANDREWS, M. D.—A female, 21 years of age, was accidentally shot, the ball, which weighed forty-eight grains, entering the brain at the left temporal region. A probe was passed into the substance of the brain three inches and a half, in a direction downward, backward, and inward; but the ball was not detected. Recovery was rapid, without an untoward symptom; and four months and a half subsequently the patient was perfectly well, having no pain and no disturbance of the intellectual faculties.

In connection with this case, Dr. Andrews furnishes abstracts of seventy-two examples of analogous injuries, collected from various sources, in the majority of which the ball or shot remained in the interior of the skull, without producing much disturbance. His advice in regard to the proper course to be pursued in such cases is eminently proper; namely, if the whereabouts of the missile can be ascertained, and it can be extracted without inflicting additional injury on the brain, the sooner it be removed the better; under opposite circumstances, it should be allowed to remain.

XIII. *A Contribution to the History of Toxæmia.*—Dr. WM. HUNT furnishes an extremely interesting and instructive contribution to the history of blood-poisoning, as observed in his own person. On three distinct occasions within

the past ten years he has been made seriously ill by inhaling concentrated infectious miasmata emanating from the human body, the train of symptoms having been of a typhoid character, and resembling somewhat those induced by a mild form of pyæmia. It is proper to premise by stating that, while remarkably sensitive to the effects of poisonous plants, the author has never suffered any trouble from punctures or abrasions received from instruments in making dissections or performing surgical operations.

The first attack was from a dead body, and occurred in the winter of 1860. Dr. Hunt made a sweeping cut through the tympanitic belly of a subject, while standing directly over it, which was followed by the escape of a most offensive gas. He was nearly overcome, but was soon able to proceed with his work. Within twenty-four hours he was taken sick, and was utterly unfit for duty for six weeks. Professor Leidy used the same subject for class-demonstration, a day or two afterward, and both he and his assistant suffered in the same way, but not so severely.

The second attack was in the latter part of 1865, when Dr. Hunt laid open an extensive abscess of the gluteal region for a man in the hospital, whose system was greatly shattered. A tremendous gush of extremely fetid pus and gas followed, and the foul air of the morbid materials was inhaled in full force. The immediate effects rapidly passed off; but in twenty-four hours, on leaving a private patient, he was attacked with rigors, and did not quit his house for five weeks.

The third attack occurred in the summer of 1867. While removing the dressings from a very bad cancer of the lower lip, the patient gave a hard but involuntary cough directly into the author's face. He thus inhaled the full effects of the accumulated offensive discharges and the fetid breath, which were, so to speak, forcibly injected into his respiratory passages. He was sickened at once; but this soon passed off, and, as in the other cases, he was seized in twenty-four hours, and was laid up for three weeks.

The symptoms of the indisposition were precisely alike in all the attacks, and only differed in degree. In the first there was a positive chill, which was followed by high fever and delirium; while in the others there were rigors succeeded by fever, with only slight mental disturbance. Coincident with these phenomena, there were general soreness and stiffness in all parts of the body, along with severe pains in the calves, head, and back. The pulse was accelerated, and in all cases the lungs seemed to be the chief seat of the local trouble. Percussion was dull over the lower lobes, and there were subcrepitant and sibilant râles, with more or less cough, and a peculiar laboured and sighing respiration. The expectoration was viscid and scanty. The tongue was coated with a whitish or yellowish fur, and retained its moisture, but this was of a viscid nature, and caused a constant clammy or sticky sensation. Thirst was not marked. The breath was heavy and sometimes fetid. The bowels were constipated, and, when moved, the dejections were very offensive. There was much flatus; and the urine was scanty.

The most prominent and peculiar symptom was complete loathing of all forms of food, and this without any absolute nausea. As the other acute signs disappeared, utter anorexia remained, and, indeed, its subsidence was denotive of convalescence. This condition lasted for about a fortnight in the first two attacks, but not so long in the last. In addition to the foregoing phenomena, there was much mental irritability, particularly on the presentation of food, and wakefulness was also a distressing symptom. Glandular enlargements were not apparent. The pains and fever subsided in a few days in all the attacks, and they were replaced by a relaxed and a very unpleasant condition of the skin, which was moist and cold, especially at night, and about the knees and back. The cough, insomnia, and anorexia, however, underwent no immediate change. There was also loss of flesh, amounting to eight or ten pounds in the last attack, which was by far the mildest of the three.

Convalescence was indicated by the ability to enjoy food and acid drinks. For weeks after apparent restoration to health, there were shortness of breath, and a sighing respiration, which were aggravated by exertion. These symptoms

gradually disappeared, and in from ten to twelve weeks after exposure recovery was complete.

As regards the nature of the affection, Dr. Hunt places it among the varieties of toxæmia, produced by the inhalation of concentrated forms of impalpable noxious emanations from organic bodies in various stages of decomposition and disease.

The diseases for which it is liable to be mistaken are influenza, enteric fever, and pyæmia. From the former it is distinguished by the persistent anorexia, and absence of coryza. The invasion is too sudden and violent for an attack of enteric fever, and there is no diarrhœa, nor eruption, nor epistaxis. The absence of prominent local lesions, and the tendency to recovery rather than to death, serve to distinguish it from pyæmia.

In reference to the treatment, it is advised that a warm bath, a mild opiate, and subsequent rest, should first be prescribed. A saline laxative should be given on the following day, and some refreshing effervescent draught will be grateful during the febrile state. Quinia, wine, and tonic tinctures are indicated, and a cough mixture containing carbonate of ammonia will be very useful. The so-called specific remedies for toxæmic conditions are worthless.

The management of the anorexia is the most important point to be attended to. If left to his own inclinations, the patient would readily succumb from exhaustion. Rare tact, coaxing, appeals to duty and reason, and firmness to persist in getting the sufferer to take something, are the great requisites in the nurse. Milk and beef essence should be given at regular intervals. In regard to the latter article, Dr. Hunt very wisely insists that, if pushed too persistently, nothing is more distasteful, and that it should therefore, be given at longer intervals than are usually prescribed, cold milk, or some solid food being substituted in the interim.

XIV. *Notes on Medical Cases.*—Dr. HORATIO C. WOOD in this paper narrates, with appropriate commentaries, seven cases, all of which possess more or less clinical interest, either from their rarity, or from their illustrating some special point in pathology or therapeutics. The value of the first, one of acute psoriasis terminating in death, is, however, greatly impaired by the fact of there having been no post-mortem examination; and we must express our astonishment in finding that “the pernicious system which prevails in the hospital made it necessary to gain the consent of the relatives, which was in the present case simply impossible.” This statement of Dr. Wood requires no comment; but we are disposed to think that the regulation could be changed by proper representation and exertion on the part of the surgical and medical staff of the Pennsylvania Hospital, in which institution the case occurred.

XV. *Cases of Progressive Locomotor Ataxia, with Remarks.*—Dr. JAMES H. HUTCHINSON, the author of this essay, has had under his immediate care three well-marked examples of progressive locomotor ataxy, which are reported in detail. In the first, seventeen years elapsed between the appearance of the first derangement of vision and death, which occurred eight years after the loss of co-ordinating power. In the second case, the interval between the first symptom and the fatal termination was six years, and the impairment of vision was neither so early nor so prominent a phenomenon as in the first instance. In the third case, the disease was of very recent origin, and, as the patient passed into the hands of another physician, the result is not known.

It is to be regretted that Dr. Hutchinson was unable to procure post-mortem examinations of the bodies of his two fatal cases, since accurate pathological observations of the changes in the nerve centres in this affection are confessedly rare. Assuming, however, that his cases agreed with those recorded by other writers, and that dissection would have revealed the lesions described by Trouseau, Clarke, Eisenmann, and others, he discusses a few of the most prominent symptoms, along with the pathology, etiology, and treatment of this peculiar disease, of which he gives a good epitome. In the second case, one grain of nitrate of silver, for which remedy great success has been claimed by Wunderlich, was administered daily for two months, but it failed to effect any good.

XVI. *Poisoning from Atropia treated by Opium; subsequent Recovery.* By D. HAYES AGNEW, M.D.—A woman had administered to her, through mis-

take, one grain and a half of the sulphate of atropia in solution. Characteristic symptoms soon set in; but the toxic effects of the alkaloid were counteracted by two hundred drops of the tincture of opium given in a period embracing eighteen hours.

XVII. *Brief Note on Fracture of the Acromion Process of the Scapula.*—Dr. A. D. HALL, the author of this short article, gives the details of a case in which one inch and a half of the acromion process were broken off, and displaced downward. A Velpeau's bandage for fracture of the scapula was applied, and retained for four weeks, and two years subsequently, the functions of the shoulder-joint were perfect.

During his residence at the Pennsylvania Hospital Dr. Hall met with another example of this uncommon accident; and, in November, 1858, he exhibited to the Pathological Society of Philadelphia a specimen, removed from an elderly man, dead of cancer of the stomach, showing fracture of the acromion process, with displacement downward and forward into the glenoid cavity, to which it was bound down by a dense ligamentous structure. The articulation of the fragment with the clavicle was not disturbed. The arm had been removed at the shoulder-joint several years previously.

XVIII. *A Case of Retroversion of the Uterus, the Posterior Wall of which was the seat of a large Mural Fibrous Tumour.* By GEORGE PEPPER, M. D.—A widow, aged fifty years, who had suffered with procidentia uteri for eighteen months, after a hard day's work was suddenly seized with retroversion of the uterus, in the posterior wall of which was seated a large fibrous tumour. When Dr. Pepper saw her, twelve days subsequently, the bladder was greatly distended; the bowels were obstinately constipated; there was anorexia, with frequent nausea, and, for the last day or two, occasional vomiting; and her forces were rapidly failing. The urine was drawn off, when a vaginal and rectal examination readily detected a dense, resisting, spheroidal mass, about the size of a foetal head, which distended the recto-vaginal pouch, and completely filled the pelvic cavity. The os uteri could not be felt.

The bladder and rectum having been evacuated, and an anæsthetic administered, the author endeavoured to elevate the mass by means of a colpeurynter, forcibly distended with water. This measure proving unsuccessful, the woman was placed on her chest and knees, and by prolonged and forcible manipulations by the fingers introduced into the rectum and vagina, the tumour was slowly dislodged, and the uterus restored to its proper position. It was now evident that the morbid growth involved the entire posterior wall of the uterus from the cervix to the fundus. The os readily admitted a sound for several inches; but it was so much elevated that it could not be reached by a single finger in the vagina.

The after-treatment consisted in keeping the uterus elevated in the pelvis by a colpeurynter introduced into the vagina, for which a glass globe pessary was substituted at the expiration of twenty-four hours. Tannin and opium suppositories were employed to favour contraction of the dilated vagina and rectum, and she was placed on Basham's iron mixture, with a nutritious diet, and her bowels were kept regulated by mild aperients. At the end of two weeks the pessary was dispensed with, and there was no tendency to a return either of the displacement or of the pre-existing procidentia.

From his remarks upon this case, which was one of considerable practical interest, we learn that Dr. Pepper has been unable to find a full account of a single similar instance on record. Retroversion and impaction in the pelvis of the uterus, whether in the gravid condition or from the existence of subinvolution, is, however, of comparatively frequent occurrence.

XIX. *Heat-Fever (Sunstroke).*—Dr. JAMES J. LEVICK, in this paper, considers the pathology of sunstroke, or heat-fever, as it is termed by Professor Wood, as well as its nosological classification, and its treatment. In view of the fact that the author has presented to the profession the prominent points of the paper in the pages of this journal, at various times during the past ten years, we only deem it necessary to make the following extract, which embodies a recapitulation of its contents.

"Insolation or sunstroke shows itself in two obvious forms—first, *exhaustion from heat*; second, *heat-fever*.

"*Exhaustion from heat* has a feeble and moderately frequent pulse, a moist skin, and a tendency to syncope on the slightest exertion. It implies a loss of power without obvious structural change, and is successfully treated by rest, the supine position, and the free use of stimulants.

"*Heat-fever* has a feeble and very frequent pulse, a pungently hot skin, a temperature, as shown by the thermometer, of from 104° to 111° F., and is often attended with great nervous disturbance. It has for its constant pathological condition an altered state of the blood, which is liquid after death, and exhibits, under the microscope, shrivelled and crenated corpuscles. It is successfully treated by the rubbing of *large pieces of ice* over the entire body of the patient, until consciousness is restored, after which iced wine and water may be cautiously administered.

"Heat-fever, whether determined by the resemblance of its symptoms during life or of its phenomena in death, finds its proper nosological classification in close association with typhus fever, spotted or petechial fever, and the plague."

XX. *On the Use of Paper for Surgical Dressings.*—Dr. ADDINELL HEWSON, struck with the fact that paper had been used in the place of lint as a surgical dressing, in the recent campaigns of the Prussian army, tested its practicability at the Pennsylvania Hospital, and, after numerous experiments, has settled on the common newspaper as being the best and the cheapest substitute for lint, linen rags, or muslin. During the whole of his six months' service he used paper dressings to the exclusion of all others—except, of course, in the application of poultices—in all varieties of accidental and surgical wounds, with the result of demonstrating that they were not inferior to the other means which he had usually been in the habit of employing for similar purposes. That they possess over patent lint the advantage of economy, which is no small consideration in a large charity, is shown by the author's estimates, from which it appears that while a yard of good patent lint costs thirty-three cents, a sheet of paper, which equals that article in usefulness as a surgical dressing, costs only one cent.

Dr. Hewson has also made paper available in the place of oiled silk, by using tissue, or Manilla paper coated with a thin layer of yellow wax. In this way not only a saving of from four hundred to six hundred per cent. (*sic*) was gained; but what is more important, waxed paper affords the advantage of discarding everything appertaining to the dressings each day, by which one source at least of renewing contamination experienced in the employment of oiled silk is avoided.

XXI. *Extract from a Clinical Lecture on Certain Forms of Muscular Rheumatism, particularly Wryneck and its Treatment.* By J. M. DA COSTA, M. D. —A servant girl, nineteen years of age, was admitted into the hospital, on the 15th of February, on account of subacute rheumatism, of two months' standing, of the left ankle, knee, and hip, these articulations being stiff and painful on motion, without there being any absolute swelling. A few days after admission, the neck was observed to be stiff, which, by the 28th, had increased to marked torticollis. She was on the iodide of potassium in five grain doses every eight hours, and Dover's powder at night. Under this treatment, she improved much; but no effect was produced on the neck. The injection of sulphate of atropia into the tissues over the contracted sterno-cleido-mastoid and trapezius muscles then suggested itself to Dr. Da Costa, and one-fiftieth of a grain of that alkaloid in solution was used hypodermically, on the 8th, 9th, and 10th of March. On the 12th, all distortion had disappeared, and the head could be moved freely and without pain in every direction. The solution was also injected over the affected joints, but no beneficial result followed.

In his comments upon this case, the author strongly recommends that the atropia be used in similar cases, that is, when the affection is recent, or before structural changes have taken place in the muscles or the surrounding textures, in cases at all resisting, and when it is feared that so much rigidity of the muscles may occur as to render it difficult for them to regain their former condition. In chronic cases, where wasting of the affected muscles has occurred,

or in congenital torticollis, he thinks it will prove a useful adjunct to, if it has not the power of being a substitute for the tenotome. In those instances of jerking, violent spasm, of the sterno-cleido-mastoid, causing torticollis, in which subcutaneous division of the muscle affords only temporary relief, atropia injections seem well worthy of careful trial; while in paralytic wryneck, or in wry-neck from disease of the vertebræ, it is not probable that they would prove beneficial.

Dr. Da Costa has also successfully resorted to this therapeutical procedure in a case of recent lumbago. One-fortieth of a grain was employed, and the constitutional effects were very marked. These, however, passed off, and, with them, the pain and rigidity of the muscles disappeared. For nine weeks, when he was last heard from, the patient had not had any return of the trouble.

XXII. *List of the more important Specimens added to the Pathological Museum during the past year, with Descriptions.*—Dr. WILLIAM PEPPER, the Curator, in this paper gives an account of forty-four specimens added to the museum of the hospital during 1867, nearly one-half of which have previously been described in the pages of this journal, either in connection with the Transactions of the Pathological Society of Philadelphia, or in articles contributed by Dr. Morton and Dr. Hunt. Three woodcuts illustrate the report, and depict the appearances of ovarian cysts.

A specimen of piliferous cyst of the right ovary, communicating with the intestinal canal, is particularly novel and interesting. The patient was admitted with symptoms of intestinal obstruction, and there was a large tumour of the right side of the abdomen. For several weeks preceding death, an uncontrollable, exhausting diarrhœa existed, and much hastened the fatal result. On post-mortem inspection there were evidences of old peritonitis. The tumour, which filled the right iliac region, and encroached upon the hypochondria and the opposite side of the median line, was found to be formed entirely by the agglutination of various parts of the viscera. The small intestines were extensively ulcerated, and, upon reaching a point, six inches above the original seat of the ileo-cæcal valve, the ileum came to an abrupt end, having sloughed away. The cæcum, with its appendix, and the beginning of the ascending colon had also disappeared. The tumour also contained a gangrenous cyst, lying free in its cavity, filled with fluid fecal matter and a large mass of brown human hair, matted together by sebaceous material. It was impossible to discover the original point of attachment of the cyst, although it had been undoubtedly developed from the right ovary. Dr. Pepper's explanation of the specimen is that the cyst "had been detached from its connections, became gangrenous, involved the adjacent parts of the intestines in destructive inflammation, and had itself been surrounded by a pseudo-cystic cavity formed by adherent viscera, into which the ileum freely poured its fecal contents."

XXIII. *Extract from the Statistical Report of the Pennsylvania Hospital, for the year ending April 27th, 1867.*—From this report we learn that 1944 cases were admitted during the year, of which 9.25 per cent. were fatal. 1241 cases were surgical, and 703 medical. Of the former, 99 died, while of the latter, 81 were fatal. Since the establishment of the Hospital in 1752, there have been admitted into it 79,181 patients, of whom 9.5 per cent. died. Including those admitted into the Pennsylvania Hospital for the Insane, the whole number of patients is 84,372.

We have now concluded our analysis of this instructive and interesting volume, and it remains for us to award to the medical and surgical staff, as well as to the editors, under whose supervision it has appeared, the credit, which they have justly earned, of having made a start in rendering the valuable material contained in the Hospital available to the profession at large. With its two hundred and twenty-five beds, which are constantly filled with carefully selected cases, the Pennsylvania Hospital must always abound in varied clinical facts, and an annual report, embracing appropriate and practical commentaries upon the most important cases, along with accounts of novel forms of disease and new or remarkable operations, cannot fail to prove of great benefit and interest to practitioners everywhere, and should meet with the encouragement which it richly deserves. In the language of the distinguished author of the

introductory paper, only "Let the Pennsylvania Hospital Reports be the true representatives of the spirit and power of her inner life—plain, sober, discreet, honest, exact, and that shall be all we will ask of her in this relation."

The papers, we need scarcely add, possess various degrees of merit; but, with one or two exceptions, we conscientiously think them highly creditable to the industry and talents of their authors, while several, from the patient research and originality evinced in their preparation, are of a very superior character. Thirteen are contributed by the staff proper of the hospital; two are from the pens of former attending physicians and surgeons; six are contributions of former resident physicians; one is an extract from the hospital records; while only one, and this is by no means the least interesting, appears to have been written by a gentleman who never had a recognized official connection with the institution. This plan of making up hospital reports is that pursued by the great charities of London; and, while we can offer no serious objections to it, it must be manifest to the reader that he is treated to rather more than the experience of the staff proper, that cases, indeed, are detailed which were never observed in the walls of a hospital. In a measure then, the title of the work, in common with that of similar productions, is a misnomer; but it would be unreasonable to expect an annual octavo volume of four hundred pages from eight physicians and surgeons.

A few typographical errors, and several contradictory statements, which are, however, of no practical moment, mar the beauty of the volume. The style in which it is produced reflects great credit upon the enterprise and liberality of the publishers.

S. W. G.

ART. XVIII.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Volume L. (Second Series, Vol. XXXII.) 8vo. pp. lxiv. 649. London: Longmans, Green & Co., 1867.

THE present volume of this valuable series contains twenty-four papers of a practical nature, and is illustrated with eleven plates, twenty-nine lithographic diagrams, and twenty-four wood-cuts. In accordance with our usual practice, we propose to give our readers a brief notice of the several papers, taking up first those of more strictly *surgical* interest, and considering afterwards those of a medical character.

I. *A Case in which Ovariectomy was twice successfully performed on the same Patient*, by T. SPENCER WELLS, F.R.C.S., etc.—An abstract of this paper has already appeared in the Quarterly Summary of this journal for January, 1867 (p. 261). The author adds to the history of his patient some interesting remarks upon the occurrence of disease in both ovaries at the same time, or in one after the removal of the other.

II. *Sequel to a Case of Colotomy for Vesico-Intestinal Fistula, death having ensued from Affection of the Bowel higher up*, by TIMOTHY HOLMES, F.R.C.S.—An account of this case appeared in the preceding volume of the *Transactions*, and was published in the form of an abstract in the Quarterly Summary of this journal for July, 1866 (p. 251); see also notice in number for July, 1867, p. 218. The patient was entirely relieved by the operation for about fifteen months, at the end of which time feces again appeared in the urine, and a few weeks of extreme suffering preceded death, which took place on October 26, 1866, the operation having been performed in the month of June of the previous year. A post-mortem examination entirely confirmed the diagnosis made by Mr. Holmes at the time of the colotomy, there being no malignant disease of any part, and death having resulted from the occurrence of a fresh ulceration between the bladder and the cæcum. This paper is illustrated with a wood-cut, which sufficiently exhibits the morbid appearances.

III. *Two Cases of Periodical Inflammation of the Right Knee-joint; with Remarks*, by CHARLES H. MOORE, F.R.C.S., &c.—An abstract of this paper may be found in the number of this journal for April, 1867 (p. 536). Mr.

Moore's remarks are of much interest, and may be read with profit by all surgeons.

Following our plan of grouping together the papers of special surgical interest, we shall next invite the attention of our readers to—

V. *On Ulceration of Nævus*, by T. PRIDGIN TEALE, JR., F. R. C. S., etc.—The principles which Mr. Teale advocates are, 1. "That in a large majority of cases in which the nævus is more or less subcutaneous, the new growth is surrounded by condensed connective tissue, forming a more or less perfect capsule, and that this limiting capsule is sufficiently distinct to enable the surgeon to coast along the surface of the tumour, enucleating to a great extent, and using the knife here and there, if necessary to assist the process of enucleation;" and 2. "That when a portion of the skin covering a nævus is involved in the disease, it is not necessary to sacrifice such diseased skin, as it may be dissected off the surface of the tumour, and, being retained as a cover to the wound, will regain gradually its natural appearance."

Three cases are detailed in which the operative procedures were based upon a consideration of these principles; and a fourth, in which instant death was caused by the injection of the perchloride of iron.

VI. *On a Case of Internal Strangulation of the Bowel by a Band, associated with a Reducible Hernia; successfully treated by Operation*, by THOMAS BRYANT, F. R. C. S., etc.—This case has already been presented to our readers in the number of the Journal for July, 1866 (p. 263), and was likewise referred to in connection with a somewhat similar case which occurred in this city, in a notice of Dr. Brinton's posthumous monograph, in the number for January of the present year (p. 238). We shall next invite attention to—

XIII. *On the Influence of Inadequate Operations on the Theory of Cancer*, by CHARLES H. MOORE, F. R. C. S., etc.—Mr. Moore, it will be remembered, is one of the most prominent advocates of the view that cancer is a disease of local origin, its spread being due to diffusion from a centre in a more or less easily traceable manner, and not depending on the existence of any cancerous diathesis. The present paper furnishes the details of fourteen interesting cases from which the author deduces the following conclusions:—

"That the recurrence of cancer is due to local conditions:

"That these conditions are not regional, so as to belong to structures out of continuity with the first tumour:

"That neither are they organic, whether as indiscriminately involving the residue of a mamma operated upon, or so as to be transferable to the second breast, in consequence of the removal of that first affected:

"That, on the contrary, recurrent cancer begins near the scar:

"That, when free in both directions, it tends toward the axilla earlier than to the residue of the breast:

"That, consequently, centrifugal dispersion, not organic origin, determines the recurrence of cancer:

"That cancer of the breast requires the careful extirpation of the entire organ:

"That the situation in which this operation is most likely to be incomplete is at the edge of the mamma, next the sternum:

"That, besides the breast, unsound adjoining textures, especially skin, should be removed in the same mass with the principal disease."

XIV. *Record of Cases treated in the Lock Hospital by Syphilization*, by JAMES R. LANE, F. R. C. S., and GEORGE G. GASCOYEN, F. R. C. S.—Twenty-seven cases in the Lock Hospital were submitted to syphilization by the authors of this paper, under the personal supervision of Professor Böeck, of Christiania, who remained three months in England for the purpose. Details of these cases are given in the paper before us, which we cannot but regard as a most valuable contribution to our knowledge of syphilis. The conclusions of the writers, which we quote in their own language, are as follows:—

"It is the impression of one of us (Mr. James Lane) from the observation of these cases, that syphilization does exert some beneficial and specific influence over the progress of the disease, possibly in the way ascribed to it by Dr. Böeck. It has appeared to him that the treatment conducts patients through the dis-

case more safely and rapidly than if they are left to themselves; that it leaves them with less liability to relapse, and that their relapses when they do occur are milder in character.

“Mr. Guscoven, on the other hand, thinks that the natural tendency to recovery which an early and uncomplicated constitutional syphilis exhibits with the lapse of time, and under circumstances favourable to the general health—such as the dietary, rest, regular hours, etc., of a hospital afford—is sufficient to account for the subsidence of the secondary symptoms during syphilization; and he is doubtful whether relapses are less frequent under this than under the ordinary methods of treatment. . . . Differing, however, as we do, on the scientific aspect of the question, we are entirely in accord as to its practical bearings, and we are decidedly of the opinion that syphilization is not a treatment which can be recommended for adoption. We consider that, even if it could be admitted to possess all the advantages claimed for it by its advocates, its superiority over other modes of treatment, or in many instances over no treatment at all, would not sufficiently compensate for its tediousness, its painfulness, and the life-long marking which it entails upon the patient.”

The various inoculations were made from the matter of both hard and soft sores, and it was found that, while that from the latter was generally easily inoculated, it was not so always; and on the other hand, that the matter obtained from the indurated sore, did occasionally, although comparatively rarely, produce well-marked positive results. We need hardly say that if these observations are confirmed, they will bring some confusion into our ideas as to the distinctive characters of the two diseases.

XVI. *Statistical Details of Three Years' Experience in respect to the form of Amaurosis supposed to be due to Tobacco*, by JONATHAN HUTCHINSON, F.R.C.S., etc.—These tables embrace thirty-seven cases, all except three being in the male sex. Of the three women, only one used tobacco (in the form of snuff), one had suffered severely from constitutional syphilis, and in the remaining one no cause whatever for the amaurosis could be assigned. Of the thirty-four cases among men, tobacco was the only apparent cause in twenty-six; five others were smokers, but in them the amaurosis was attributable to other sources, and in the remaining three, Mr. Hutchinson considers it scarcely possible that tobacco could have been the cause of the disease.

XVII. *A Case of Aneurism of the Femoral Artery, the Sac of which Burst, and its Treatment; with Observations*, by JOHN BIRKETT, F.R.C.S., etc.—The aneurism in this case was situated in the course of the right femoral artery, and had existed for about eight months, the sac having burst only ten hours before the patient's admission to Guy's Hospital. The operation performed by Mr. Birkett consisted in laying open the sac, and securing the vessel with ligatures at points immediately above and below the aneurismal tumour. The lower ligature dropped on the tenth day, and the upper on the fifteenth. Secondary hemorrhage from the proximal extremity occurred on the seventeenth day, and required the opening of the wound and the reapplication of a ligature. The latter became detached on the eighth day (twenty-fifth from the operation). Two slight subsequent hemorrhages, at an interval of several days, delayed but did not prevent the healing of the wound, which was finally cicatrized at the end of eight weeks.

Mr. Birkett appends some interesting remarks as to the cases in which the operation as performed (generally known as the “old operation,” or that of Antyllus) should be preferred to either amputation above the seat of the disease, or the ordinary Hunterian operation for aneurism. Our readers will find an important case of traumatic brachial aneurism in which the old operation was resorted to, reported by ourselves, in the *Transactions of the Philadelphia College of Physicians* for February 1, 1865.—[See *Amer. Journ. of Med. Sciences*, for July, 1865, p. 97.]

XIX. *Contributions to the Pathology of Aneurisms and Tumours, involving the Upper Portion of the Chest and Root of the Neck*, by JOHN COCKLE, M. D.—Five interesting cases are narrated at length, and illustrated with three lithographic plates, embracing nine figures. We quote Dr. Cockle's remarks as to the diagnosis of innominate aneurisms.

"It is only when the distal end of the trunk becomes the seat of aneurism that accuracy of diagnosis is attainable, though, in such a case, the origins of the subclavian and carotid arteries often share the dilatation. Certain signs and symptoms have been ascribed to innominate aneurism. Their value is high, directly as intra-thoracic disease can be eliminated; it becomes, as has just been shown, extremely small as the evidence for such disease increases. This is by far the most important point in diagnosis. The only possible source of error is the rare fact of an aortic sac arising from the convex wall of the arch and mounting up the neck. Valuable aid is afforded by the knowledge of some antecedent local injury, or violent and unusual effort (for very many of such cases are traumatic). These points determined, should severe pain of the right shoulder, clavicle, right side of the heart, neck, and arm, with local venous congestion or œdema, precede the appearance of a pulsating tumour, which, emerging from beneath the right sterno-clavicular articulation, and often displacing the head of the clavicle during its ascent, distends the space between the heads of the sterno-mastoid muscle and fills the *episternal notch*; should there be a marked weakening of pulsation in the right radial and carotid arteries, pressure upon one or other artery lessening the impulse on the tumour; should a murmur, loudest over the tumour and at the sterno-clavicular articulation, diminish downwards, yet ascend the arteries on the right side, if pervious, such murmur being absent on the left side, we may with tolerable safety diagnose an aneurism of the terminal portion of the innominate artery."

XX. *On the Repair of Arteries and Veins after Injury.*—This paper is the joint production of HENRY LEE, F. R. C. S., and LIONEL S. BEALE, F. R. S., etc.—It possesses great interest, as the question discussed is still an open one in the minds of many surgeons; as a proof of this we may refer to Dr. Addinell Hewson's paper on Acupressure in the first volume of the *Pennsylvania Hospital Reports* recently published, where the opinion is maintained that wounds of arteries are united by adhesion of coagulable lymph, effused from the vasa vasorum, and without there being any necessity for the formation of a clot. (*Pennsylvania Hospital Reports*, vol. i. p. 130.) Mr. Lee's and Prof. Beale's observations, as narrated in the article now under consideration, lend no support whatever to this view; it will probably be more satisfactory, however, to our readers to hear their opinion in their own words.

"If the free escape of blood from a small wound made through all the coats of an artery be prevented by closure of the external wound, clots are of course formed in the areolar tissue and among the other textures external to the vessel, and thus the escape of blood gradually ceases. In our specimens the blood in the areolar coat of the artery was found to extend to some distance from the seat of the injury. The opening in the *elastic coat of the vessel* is not, however, immediately occupied by blood, but, as has been shown, is gradually filled up with a perfectly colourless substance. This material which resembles the fibrin found in some aneurismal sacs, is, like that substance, deposited from the blood layer after layer until the space is filled up. Sometimes . . . the process continues until an actual elevation, projecting above the level of the inner surface of the artery, is formed. The thin laminae of transparent fibrin are well seen in Figs. 4 and 6, and from their arrangement it is evident that they have been formed from the blood which flowed along the vessel, and not from any material poured out from beneath by the vasa vasorum or from the arterial tissues. We do not, however, regard the material as a mere deposit of fibrin from the blood, but are disposed to think that it is formed by the agency of the white blood corpuscles, which we know would adhere to the surface of the blood-clot which occupies the lower part of the wound. It seems probable that these masses of germinal matter, as they slowly move over the surface, form the material allied to fibrin figured in the drawings. This substance, it must be remembered, has been produced within three days, and yet it exhibits a certain definiteness of arrangement. It adheres imperfectly to the surface of the artery, but firmly to the comparatively rough lips of the wound, and by its slow contraction it no doubt draws these towards each other. Thus we believe is formed, layer after layer, a temporary tissue, which, backed up as it is by a thick clot,

is strong enough to resist the ordinary lateral pressure of the blood." This paper is adorned with several well executed illustrations.

XXII. *On a Case of Concussion—Lesion, with extensive Secondary Degenerations of the Spinal Cord, followed by general Muscular Atrophy.* By H. CHARLTON BASTIAN, M. D., etc.—This case, the general nature of which is sufficiently expressed by the title, was one of so-called concussion of the spinal cord, in which temporary improvement was after about two months followed by gradual emaciation and exhaustion, death finally occurring rather less than six months from the date of the injury. The post-mortem appearances and the results of microscopic inspection of the cord are given in detail, and the whole subject discussed in a thorough and instructive manner. For the particulars we must refer our readers to the paper itself, merely noting here a very important point—that whereas the cord, when examined with the microscope, was found extensively degenerated, to the naked eye it presented absolutely no morbid appearances whatever.

This paper is quite elaborate, and is illustrated with three lithographic plates.

The last of the surgical papers is—

XXIII. *A Third and Fourth Series of Fifty Cases of Ovariectomy, with Remarks on the Situation and Length of the Incision required in this Operation.* By T. SPENCER WELLS, F. R. C. S., etc.—The first series of fifty cases was published in the 46th, and the second, of the same number, in the 48th volume of the *Transactions*. The record of the present paper brings up the entire number of the author's operations to two hundred. Of the first hundred cases, Mr. Wells lost thirty-four; while the mortality in his second hundred has been reduced to twenty-eight. Of nine cases where the operation was not completed, four died. The most favourable ages for the operation are below twenty, and between forty and fifty. The mortality is about nine *per cent.* less among single women than among the married. In Mr. Wells's first hundred cases the deaths among private patients were ten *per cent.* more numerous than among his hospital patients; in his second hundred cases this proportion has been exactly reversed.

With regard to the influence of the length of incision upon recovery, Mr. Wells has found that where it has not exceeded six inches, the mortality has been twelve *per cent.* less than where that limit has been passed. Mr. Wells uniformly makes his incision in the linea alba, and pointedly condemns the practice lately advocated by Dr. H. R. Storer, of Boston, of making the incision in the track of one of the rectus muscles. (See *American Journal of the Medical Sciences*, Jan. 1866, p. 125, note.)

We have thus concluded our review of the surgical portion of the present volume of *Transactions*, and we doubt not that our readers will coincide in the favourable opinion we have formed as to its interest and practical value.

J. A., JR.

We shall now invite attention to the papers appertaining more especially to medicine. The first is—

IV. *On the Nature of the Waxy, Lardaceous, or Amyloid Deposit.* By WILLIAM H. DICKINSON, M. D., etc.—The author has had the opportunity of observing 60 cases of waxy or amyloid degeneration of the solid organs, and has found that in 46 of these cases there was a well-attested history of suppuration, and that in 4 others suppuration had probably preceded the outbreak of the disease. Comparing this result with those shown by the cases collected by Dr. Wilks (*Guy's Hospital Reports*, 1856 and 1865) and by Dr. Stewart (*Edinburgh Monthly*, 1861 and 1864, and *Brit. and For. Med.-Chir. Rev.*, 1866), he finds that of 109 cases, suppuration had existed in 83; and the fact that these two gentlemen collected their cases without reference to antecedent suppuration, makes these figures more valuable.

In speaking of the test for this kind of degeneration, iodine and sulphuric acid, he says that he has never been able to produce the blue tint spoken of by Virchow, but that a reddish-brown colour followed their application to the diseased tissue, instead of the yellow colour which is obtained normally. He has found, moreover, that we possess in sulphate of indigo as good a test as iodine; the healthy liver, when soaked in a weak solution of this salt, becomes of a blue

colour, which changes rapidly to green, but a waxy liver so treated retains the colour. The colours obtained by iodine and sulphate of indigo are not destroyed if the affected tissue be soaked in alcohol, acids, or aqua ammoniæ, but fade when it is treated with a solution of caustic soda or potassa; and a waxy liver first treated with a solution of either of these alkalies, fails to respond to either test. Dr. Dickinson naturally infers from this that there is a deficiency of these substances in the organs which have undergone this form of degeneration, and this inference he proves to be correct by a comparison of the analysis of a healthy liver with that of a waxy liver; in the latter soda and potassa are found to be decidedly diminished in quantity, and this deficiency he explains by the suppuration. Pus, as is well known, contains both these substances in larger proportion than the blood; hence a drain of this kind cannot long continue without the occurrence of the result above indicated. He thinks that the deposit in the organs consists essentially of dealkalized fibrin, and says that if fibrin be treated with dilute hydrochloric acid, and then the solution evaporated to dryness, a substance will be obtained which reacts with iodine precisely as the amyloid liver. He proposes to apply the term "Depurative" to the disease, as significant of the process which is its most frequent cause. The objection to the word is, as he himself says, its frequent use in another sense.

The practical deduction to be drawn from this paper is that the exhibition of alkalies is imperatively called for, not merely during the course of the disease, but also in all surgical affections which are accompanied at any stage by profuse suppuration.

VII. *On the Condition of the Urine in three cases of Epilepsy*, by F. W. GIBSON, M. D., etc.—The examination of the urine in mental diseases has acquired some interest in this city, from the attempt by the prisoner's counsel, in a recent trial for murder—to prove the insanity of the accused, by the presence of oxalate of lime in his urine. As a result of the analysis of the urine in these three cases, Dr. Gibson says: "There is no constant change in the urine, although there appears to be some connection between the occurrence of the fits and increase in the water and urea, and this increase is subsequent to the occurrence of the fits." He also adds: "I may state in conclusion, that I have taken the temperature of a great many epileptics, both during the fits and at various other times, and that in no case of uncomplicated epilepsy have I found any deviation from the normal standard."

VIII. *Acute Poisoning by Phosphorus; Jaundice; Death on the fifth day. Fatty Degeneration of the Liver, Kidneys, Gastric Follicles, Pancreas, Heart, etc.*, by SAMUEL O. HABERSHON, M. D., etc.—This article contains the history of a case of acute poisoning by phosphorus. The patient, a woman aged 28 years, took in mistake for vinegar, some rat poison, which had been mixed with water; the quantity of phosphorus taken in this way being estimated at 5 grains. The symptoms which immediately followed the swallowing of the mixture were burning pain in the mouth and throat, phosphorescent breath, and violent vomiting and purging. All these symptoms, however, ceased in two hours, and no others appeared until the fifth day—when she was seized with violent pain in the back, and her skin, a short time afterwards, was observed to be deeply jaundiced, with here and there an ecchymotic patch. In this condition she was brought to Guy's Hospital. The thermometer placed in the axilla indicated only a temperature of 89.8° a few hours after admission. The case terminated on the same day; death being ushered in by the vomiting of a dark grumous fluid. The *post-mortem examination* showed a general tendency to the occurrence of ecchymoses not only in the skin but in some of the internal organs, but the most marked lesions were found in the solid organs of the abdomen, and are thus described by Dr. Habershon:—

"The cells of the liver were gorged with fat, and the nuclei were lost; so also with the kidney, the uriniferous tubes were distended with highly refracting globules, which were soluble in ether. The gastric follicles were distended and contained numerous fat corpuscles; the pancreatic glandular cells also presented oil globules. In the spleen minute highly refracting granules were observed, but no cellular structure. The voluntary muscular fibre was partially degenerated; some portions presented the transverse markings, others consisted

entirely of highly refracting particles; similar partial degeneration was found in the heart." Dr. Fagge administered gr. j of the rat poison to a healthy rabbit, which caused its death on the fourth day; the liver of the animal and its muscles from the thigh were found to have undergone fatty degeneration, but the heart and kidneys were not so much altered.

IX. *Poisoning by Phosphorus; Jaundice; Death in six days; Fatty Degeneration of Liver and Kidneys.* by THOMAS HILLIER, M. D., etc.—The author as an addition to the case reported by Dr. Habershon, gives the history of a case of a child, who was poisoned by sucking Lucifer matches. In this case as in the other, death took place on the sixth day, and was preceded by convulsions. The autopsy revealed the fact that the intestines and stomach contained altered blood and that the liver and kidneys had become fatty.

X. *On the Pathology and Treatment of Cholera*, by GEORGE JOHNSON, M. D., etc.—In this paper the peculiar views of Dr. Johnson are sustained with his usual ability, but the profession is so familiar with these views that it is unnecessary to give an abstract.

XI. *On the Treatment of Cholera and Epidemic Diarrhœa; with a Record of Cases*, by J. WILSON McCLOY, M. D., etc., and ROBERT ROBERTSON, M. D., etc.—This is also a paper communicated by Dr. Johnson, and in it the correctness of his views of the treatment of cholera is advocated and is thought to be established by the results of the experiments made by these gentlemen. The number of cases treated was 375. Of those treated with castor oil alone, 30.45 per cent. died; of those treated with castor oil and the liberal use of stimulants, 41.37 per cent. died; of those treated with astringents, stimulants, ice, hypodermic injections, camphor, etc., 71.42 per cent. died. In no case, is there reason to suspect that there was any selection of cases made. The conclusion which these gentlemen draw is, of course, in favour of what is known as the eliminative plan of treatment.

XII. *A Study of the Influence of Weather and Season upon Public Health, made upon above 217,000 Cases of Sickness newly occurring at Institutions for the Sick Poor in Islington, during 1857-1865.* I. *The Influence of Atmospheric Temperature.* by EDWARD BALLARD, M. D., etc.—This is a very long and valuable paper, but one which it is difficult to analyze. We must, therefore, content ourselves with giving a few of the conclusions at which Dr. Ballard arrives.

"Rises of mean weekly temperature were associated with increase of sickness (61.73 per cent.), much more frequently than with decrease of sickness (37.75 per cent.).

"That the rises themselves were influential in producing the greater frequency with which increase of sickness took place, is shown by the observation that the frequency with which increase of sickness occurred, was greater when the extent of the rises was great, than when it was comparatively small.

"Falls of mean weekly temperature were associated with decrease of sickness (58.54 per cent.), much more frequently than with increase of sickness (39.37 per cent.).

"That the falls themselves were influential in producing the greater frequency with which decrease of sickness took place, is shown by the observation that the frequency with which decrease of sickness occurred, was greater when the extent of the falls was great, than when it was comparatively small."

XV. *Observations on the Temperature and the Urine in Typhus Fever*, by CHARLES E. SQUAREY, M. R. C. S., etc.—The author has made a series of observations on eighteen typhus fever patients in the London Fever Hospital, in regard to the temperature during the febrile stage and in convalescence, and also as regards the amount and constitution of the urine. He found that the thermometer always marked a high degree of heat during the first seven to nine days of the fever, that generally between the ninth and tenth days the defervescence commenced, that this instead of being sudden, as asserted by Drs. Buchanan and Aitken was always gradual, and that the highest marking of the thermometer was 105.2°. Little or no information can be drawn from the state of the temperature in a diagnostic point of view, as by it we cannot distinguish the commencement of typhus fever from that of smallpox; but that as regards prog-

nosis, a long-continued high temperature is not so unfavourable as a sudden fall in the temperature, the other symptoms continuing with undiminished severity.

The urine was examined every morning whenever it was possible to collect it, and it was with very few exceptions found to present an increase of the urea during the pyrexial period and a diminution afterwards; the chlorides, on the other hand, were decidedly diminished, both during the height of the fever and later. This deficiency of the chlorides is partly explained by diminished ingestion, but not entirely so, as large quantities have been administered without producing a corresponding increase in the urine. The watery part of the urinary secretion is almost invariably diminished.

XVIII. *On the Inoculation of Animals, as a Means of Diagnosis in Tubercular Phthisis*,¹ by WILLIAM MARCET, M.D., etc.—The experiments of Dr. Villemin tend to prove that tubercular phthisis can be inoculated from man to animals, and the object of the present paper is to show that tubercular phthisis may be caused in some of the lower animals by the inoculation of the sputa of consumptives. Eighteen Guinea pigs were inoculated—eleven with the expectorations from cases of undoubted phthisis; two with the expectorations from doubtful cases; one with the blood of a tubercular dead human body; one with the blood of the animal used in the preceding experiment, ten days after the operation; two with pus taken from the chest in a case of empyema; and the remaining one with the sputa from a case of bronchitis. Of the eleven inoculated with the sputa from cases of phthisis, one died three days after the inoculation, obviously from some cause independent of the operation; six died and four were killed some time after the inoculation, and in every instance tubercles were found. In the animals inoculated with the blood of a dead tubercular human body, and with pus from a case of empyema, tubercles were found. In the remaining animals there was no evidence of tubercular deposit.

In order that the objection might not be raised that the tubercular deposits were due to other causes, Dr. Marcet subjected four Guinea-pigs to precisely the same influences as those experimented with, keeping them in same hatch, and feeding them with the same food. After two months three were killed, and were found free from tubercle, and the fourth was still living, apparently healthy, at the time of the reading of the paper.

The method of inoculation is simple, and is thus described: "The sputa being collected in a capsule, a thread, passed through a needle, was thoroughly stirred about with the contents of the capsule, so as to become well impregnated with them. A small incision was then made in the skin of the animal, and the needle introduced right through the wound and under the skin, to be brought out a small distance—say a quarter of an inch—from the incision; by means of slight pressure, with the finger, on the thread while being drawn out under the skin, the matter it contained was pressed out into the subcutaneous tissue, where it remained."

The experiments seemed to have been carefully performed, and all sources of error excluded. We should, therefore, be glad to hear of them being repeated, for if the same result is obtained by other experimenters, a valuable addition will be made to our means of diagnosis in doubtful cases. Even the most expert auscultator is sometimes at fault in some cases of phthisis, and a positive result from inoculation would certainly at once disperse his doubts.

XXI. *On a Case of Muscular Atrophy, with Disease of the Spinal Cord and Medulla Oblongata*, by J. LOCKHART CLARKE, F.R.S., and J. HUGHLINGS JACKSON, M.D., etc.—This is a report of a case of muscular atrophy, apparently taking its origin from a fall upon the right hand by which the thumb was much injured. The disease lasted for a little over two years; the autopsy showed that the principal changes had taken place in the medulla oblongata and spinal cord, and consisted of atrophy and softening in different parts.

XXIV. *Report of the Scientific Committee appointed to Investigate the Physiological and Therapeutical Effects of the Hypodermic Method of Injection*.—An abstract of this paper has already appeared in the October number of this journal for 1867.

J. H. H.

¹ Gazette Hebdomadaire for December, 1865, and November and December, 1866.

ART. XIX.—*Transactions of the Epidemiological Society of London.* Vol. II. Part II. Sessions 1864-5, and 1865-6. 8vo. pp. 280. London, 1867.

THE object of the Epidemiological Society of London is the study of epidemic and endemic diseases, with especial reference to the investigation of the various external agencies, and the different conditions of life which favour their development or influence their character, and the sanitary and hygienic measures best fitted to check, mitigate, or prevent them. There will be found in each volume of its *Transactions* a record of valuable facts, bearing directly upon one or other of these subjects, either in confirmation, development, or rectification of opinions heretofore entertained, or to form the basis of correct views of the etiology, and the means for the amelioration and prophylaxis of disease whether of an endemic or epidemic character, the causation and consequently the prevention of which are as yet involved in obscurity. Many of the facts recorded in the publications of the Society, in their isolated form and limited range, have, of themselves, but little practical value; but when collated with other observations bearing upon the same questions, collected in other localities, or in the same localities during different occurrences of the same or similar diseases, they become invaluable as the means by which alone certain important truths, bearing upon the production of disease, can be satisfactorily determined. Of this character are the majority of the observations embraced in the leading papers which compose the volume before us.

The first paper is devoted to the notice of "a case of presumed Delhi boil," by F. J. Burge. The general characters of disease presented in the case described, were, we are told, more allied to the eruptive disease known to the English and American physicians as *rupia*, than to any other. Apparently a somewhat kindred malady, known as the "Aleppo evil," prevails in the valleys of the Tigris and Euphrates, to which locations it is confined. It is said to occur only once in the same individual. Both maladies, however, are referred to similar exciting causes. The general condition of the parents and child, in the case described; the non-existence of throat affection in either; the absence of any purple hue of the parts affected, argue against a syphilitic taint. The purulent and non-vesicular character of the eruption, with the concomitant circumstances, and the refractory nature of the complaint, tend to separate it from *rupia*. Its communication by contagion is doubtful. It is reported that the occurrence of measles is prophylactic of the disease.

The next paper is on "the prevalence, distribution, and limitation* of scarlet fever in England," by J. N. Radcliffe, though highly interesting in all its details, will not admit of any satisfactory analysis adapted to our limits.

Then follows a paper by Dr. Babington, "on the limitation of *Venereal diseases* among the civil population. It is marked throughout by good sense, but suggests no preventive measure that would be tolerated or could be carried out successfully in any portion of the United States.

We have next a communication from Dr. Smart, R. N., in respect to *Diphtheria*, as it has occurred in Bermuda. It presents no new facts in respect to the causation and general pathology of the disease.

Dr. R. Lawson presents a short notice of "*Epidemics* in the Colonies of Cape of Good Hope and Natal, in 1862-63." Of the epidemics scarcely more than a mere list is given. We are informed that beyond the Tugela, in 1862, a fever prevailed during the early part of the year, which the traders described as very fatal. Death was very frequently preceded by "yellowness of surface and black vomit." During the same season a similar disease prevailed at Klerkorp, in lat. $26\frac{1}{2}$ S., long. $37\frac{1}{2}$ E., about three hundred miles from the sea. It commenced in January, and carried off fourteen or fifteen persons out of a very small population. In 1859 three such cases were observed in soldiers at King William's Town, in the south of Africa. They proved quickly fatal. The medical officers who treated the cases considered that they bore the characteristics of yellow fever.

The subject of "*Vaccination in Tasmania*," is treated of by Dr. E. S. Hall. His remarks have little interest beyond what is merely local to the island indicated.

J. N. Radcliffe describes "recent additions to our knowledge of *Epidemics in England*, during the sixteenth and seventeenth centuries." A very interesting medico-historical paper. A similar remark may be made also in reference to the succeeding paper by Dr. J. Stark, presenting "*Remarks on the Epidemic Fever of Scotland*, during 1863-64-65, and on the epidemics of fever which have prevailed in Scotland during the past century and a quarter."

Dr. Stark remarks, that in all previous epidemics of which we have accurate records, more than one type of fever has prevailed; the present epidemic in Scotland presenting no exception to this general law. While pure spotted typhus and enteric fever have constituted the majority of the cases, instances of relapsing fever, of simple continued fever, of gastric fever, and of febricula, were not few. But it is useless to speak of types of fever unless we distinctly understand one another as to the names and definitions we assign to each form. The names and definitions adopted by Dr. Stark are as follows:—

1. *Typhus fever* (spotted fever, low, putrid, brain or nervous fever). A continued fever, characterized by great prostration, the early appearance on the skin of a mulberry or mealy rash (*but not in successive crops*), generally remaining visible during the course of the disease. Bowels generally confined.

2. *Enteric fever* (typhoid, gastro-enteric, and gastric-fever, dothineritis). A continued fever, with rose-coloured spots, appearing chiefly on the trunk of the body, about the end of the first week, *in successive crops*, each continuing for about three or four days. Bowels generally loose, abdominal pain, enlargement and ulceration of the aggregated glands of the ileum usually met with on dissection.

3. *Relapsing fever* (relapsing or short typhus, bilious typhoid fever, typhina, synocha). A continued fever of various but short duration; in general absence of eruption; intermission of all the symptoms, and an apparent return to health for a longer or shorter period, the fever relapsing after from five to eight days or more; there being often more than one relapse in the course of the disease. Skin often dark, or more or less yellow. A strong tendency to enlargement of the liver and spleen.

4. *Gastric fever* (bilious fever). A continued fever without eruption, attended by gastric and bilious derangement. Skin often more or less yellow.

5. *Simple continued fever* (simple typhus, simple fever). A continued fever without eruption, and with no tendency to relapse.

6. *Febricula*; a simple fever without eruption, and, at the most, only from two to four days' continuance.

7. *Infantile fever* (infantile remittent fever). Fever occurring in childhood, with daily exacerbations and remissions, and a tendency to diarrhœa. Cases of enteritis, and of continued fever in some of its forms, are often mistaken for this fever—if, indeed, it be anything else than a form of enteritis.

"It is a great mistake," Dr. S. remarks, "to suppose that either of the above forms of fever are new forms, or of recent origin, as if the old well-known spotted typhus had been gradually giving way to these other forms, or was changing its type, as is the favourite theory with some. In almost every epidemic of which we have particular accounts left us, it would seem that nearly every one of the now recognized leading types of fever have co-existed, and that these several forms of types recur in the epidemics of to-day as unchanged as they were a century and a half ago." "Modern nosologists incline to regard each form of fever as a distinct species." This Dr. S. regards as a mistake. To him they appear to be only distinct varieties. "In every epidemic numerous cases occur which it is quite impossible to refer with certainty to any of the forms, as they seem to partake of the character of more than one, and sometimes actually pass from the one to the other."

From the facts adduced in the paper before us, it would appear that in every epidemic of fever, nearly all the varieties of fever occur; but, at the same time, that every particular epidemic has its own special characteristics, because of the predominance of one or other form of fever.

"A very remarkable fact has been observed in Scotland, and that is, that the same type of fever does not prevail in each locality; while one form seems to take the lead in one locality, another and very different form seems to take the lead in another. This fact deserves special notice, inasmuch as it would seem to prove that, if we admit that epidemics of fever are chiefly owing to general—say atmospheric—causes, we must also allow that local causes have a strongly modifying influence, causing the fever to assume a type in one place different from that in another."

Facts would seem to bestow considerable probability upon a suggestion of Dr. S., namely, that the form of fever which furnishes only a *small* proportion of the cases in any epidemic of fever, ranks very high in mortality.

Dr. Smart presents a very excellent and highly instructive paper "On Scarlatina Rheumatica, vel Arthritica (*Copeland*): *Breakbone Fever*, or *Dengue*."

There occurs within the epidemic range of yellow fever, a febrile affection, known as breakbone fever or dengue. Its characteristics are severity of accession, a combination of skin eruption with rheumatic pains, and favourableness of result. It has been known to accompany yellow fever in epidemic seasons, holding then a somewhat analogous relation to it as that which diarrhoea holds to cholera in epidemics of the latter. There are grounds for suspicion that a ship, possessing bad hygienic conditions, brought within an epidemic of dengue, may have genuine yellow fever developed on board her.

Basing his account of dengue upon the study of its recent occurrences in the island of Bermuda, Dr. S. sketches its symptomatology; of this we present the following sketch:—

Incubative stage.—Uncertain. Often indisposition of a few days preceded by rigor or chills, frequently attended by disorder of chylopoietic viscera. In quite as many instances the attack was sudden, and at once violent.

Invasion.—Rarely attended with rigors save in very sudden attacks. The febrile stage was usually preceded by chills and a sense of creeping through the back and limbs, followed by prostration and a sense of danger, amounting, sometimes, to apathy. In two children, aged about 10 years, the fever was ushered in by epileptiform convulsions.

Heat stage.—Intense frontal and orbital pain; a feeling as if the eyes were being forced from their sockets; severe pains in back and limbs; restlessness; secretions generally inactive; eyes reddened and dry; face, neck, and trunk of a scarlatinous, sometimes rubecoloid hue; temperature much increased; diminution of external sensibility. Pulse excited in frequency, usually labouring in force. In cases of sudden onset tongue unaffected, but thickly coated, often yellow, where there had been premonitory indisposition.

This stage lasted, in different cases, from six to thirty-six hours, and then remitted, "by perspiration, in a drowsy sleep." In, perhaps, the majority of patients, milder febrile reactions and remissions continued still to continue for a couple of days, during which disappeared, first the headache, then the spinal pains, and lastly those of the limbs. About the fourth day convalescence commenced with free spontaneous stools, and restored kidney secretion: after a few days strength was restored, and the ordinary state attained.

The eruption was usually bright red, with raised papillæ of skin, the redness disappearing under pressure and returning when this was removed. In the milder cases the skin was of a dusky hue, fading on pressure and disappearing during convalescence. Sudamina often appeared about the neck and trunk during the sweating crisis. "It was evident throughout the epidemic, that with a vivid rash in the first stage, there was protection from second attacks."

"The fallen pulse, increasing in frequency on rising from the recumbent to the erect position, on which change syncope occurs at times, was a constant phenomenon, although less strongly marked, and of shorter continuance in some cases than in others. In the severer form of the fever, the irregular fever reactions of the stage of subsidence continued until the seventh day, when a well-marked metaposis occurred, followed by the series of symptoms which distinguish this epidemic disease."

Previously to that change, in the severest form, the phenomena already described were more marked. While on the face the eruption was continuous,

like scarlatina, on the chest it was patchy, like rubeola. The yellow-coated, red-edged tongue, the diarrhoea, and general soreness of abdomen, indicated disorder of the liver and digestive mucous tract. Hemorrhagic effort towards the surface was indicated by epistaxis and turgescence of the mouth lining.

After the seventh day change, the eruption became universally rubeoloid over body and limbs; no fever heat; hemorrhagic effort quickly disappeared; for several days the circulation increased constantly in strength; the headache suddenly ceased, while the dorsal and limb pains lingered. This was but a prolongation of the stage of subsidence, during which the tongue continued coated, showing a morbid condition of the gastro-hepatic functions. As the loaded state of the tongue, after a partial disappearance of it in the sweating stage, in several instances returned, it was inferred that there existed depraved secretions from the stomach and its collateral viscera, resulting from the congested status of blood in them, of which there were so many simultaneous indications externally. Other organs besides the liver were liable to engorgement. More rarely the respiratory mucous track displayed symptoms of passive engorgement; hæmoptysis occurred in one case.

Dengue has no regular sequelæ, which fact diagnoses it from rheumatism and from the proper eruptive fever.

For the little that is known in relation to the pathological anatomy of dengue, of its probable etiology, and of its relation to yellow fever, we must refer to the paper of Dr. S. We cannot command the space which an analysis of those portions of it would require.

"On the outbreak of *Epidemic Cerebro-spinal meningitis* in the province of Dantzic in 1865," is an interesting communication from Professor Hirsch, of Berlin. Though the well recorded facts embraced in it add but little to our knowledge of the disease to which they refer, they are nevertheless valuable if only to confirm our own observations in respect to the causes, character, course, and treatment of a formidable and often very acute disease. We concur with Dr. H. in his remarks upon the value of narcotics in the treatment of the disease under consideration.

Dr. W. D. Moore communicates a paper on "the *State of Disease in Sweden* during the years 1862-1863." The prevailing diseases were measles, diphtheria, and smallpox. Dysentery and ague were prevalent to only a slight extent.

Dr. F. J. Brown describes "an *Epidemic of Cerebro-spinal meningitis* at Rochester, with introductory remarks on other epidemics that preceded it. These latter were relapsing typhus fever, August, 1864, accompanied with and followed by severe aphthous affections of the mouth, throat, anus or vulva. Hooping-cough, December, 1864; acute colitis, June, 1865, three cases; idiopathic tetanus, March and July, 1865, two cases.

Cerebro-spinal disorder appeared in Rochester under two forms: 1. *Cerebro-spinal neuro-myalgia*, and 2. *Cerebro-spinal meningitis*.

"The neuro-myalgia," says Dr. B., "has presented two varieties differing in degree of severity, viz: (a) Cases marked principally by the occurrence of vertigo and nuchal stiffness; (b) Cases manifesting severe pains, generally throughout the body and extremities, and accompanied by vomiting, in addition to nuchal pains and stiffness, and a few head symptoms."

On the subject of cerebro-spinal meningitis the paper presents nothing absolutely new.

An abstract is given of a paper by Dr. A. H. Howe, "on the *Laws of Pestilence*."

The abstract comprises twenty-two propositions, many of which are not altogether destitute of a probable truthfulness. As a series of laws explanatory of the appearance, source, progress, and spread of epidemics, they are at best but hypothetical, though, we admit, highly plausible. To understand correctly the views of the author, the entire abstract as given in the *Transactions* must be carefully studied.

Dr. H. Weber presents a review of "Professor Pettinkofer's theory of the *mode of propagation of cholera*." The theory has of late years obtained the assent of many distinguished authorities. It assumes that "the two essential

conditions for the propagation of cholera, and for the occurrence of epidemics of the disease, are human intercourse, and a certain nature of the locality; or, in other words, the excretions of cholera patients to give the germ, and a soil for its development." The details of this theory are no doubt familiar to our readers as they were published in the *Medical News* for March, 1866, p. 40 *et seq.*, and we need not therefore dwell further on the subject.

An account of the "*Epidemic Varioloid Varicella* in Jamaica" is given by Dr. J. Anderson. It is of a strictly local character. It has some bearing, however, upon the question as to the relation, if any, which exists between varicella and the varioloid disease.

H. Hadlow, Acting Surgeon, gives an account of "an outbreak of *Dysentery* in H. M. Ship *Conqueror*," in the summer of 1864. It presents no points of especial interest.

The next paper is on "the theory and mode of *Propagation of Cholera*," by Dr. B. W. Richardson.

The views of Dr. R., on the cause and propagation of cholera, need not be presented, as they were laid before our readers in the No. of the *Medical News* for Sept. 1866, p. 156 *et seq.*

A very instructive paper is presented by Dr. W. Dickson, R. N., "on *Scurvy in the mercantile marine*." It adds, however, but little to our present knowledge of the cause and prevention of scurvy on shipboard.

In the next paper Dr. J. B. Sanderson treats of "*the Cattle plague* in its epidemiological aspects." This paper will be read with interest and profit by all who are interested in the investigation of the cause and propagation of the cattle plague with a view to the establishment of a true basis for prophylaxis.

Besides the papers we have noticed, the volume before us contains three presidential addresses, and a very neat biographical sketch of the late Dr. Benjamin G. Babington.

The appendices are made up of the Report of the Smallpox and Vaccination Committee (April, 1864). Report on the Questions submitted by Dr. Farr to the Council, concerning the Classification of Diseases (Feb. 1865). Report of the Council on Cholera Hospitals (July, 1866). Memorials concerning Cholera to the Privy Council, etc. (September, 1865).
D. F. C.

ART. XX.—*Report on Leprosy by the Royal College of Physicians. Prepared for Her Majesty's Secretary of State for the Colonies. With an Appendix.* 4to. pp. 244. London: 1867.

This highly interesting report is based upon the replies made by competent persons, in the British Colonies of the West Indies and elsewhere, to queries propounded by the College at the request of the Colonial Secretary. The queries were seventeen in number. The leading points to which they have reference will be understood by the following abstract of the conclusions on the subject-matter of each, drawn up by a committee of the College from an examination of the entire evidence comprised in the answers received.

1. The distinctive characters of leprosy are the same in all parts of the world where the disease has appeared. They are certain forms of cutaneous eruption and discoloration, with a tendency to ulceration or to death of the affected parts, with disorders of innervation, more particularly the impairment or loss of sensibility.

There are described two forms of the disease, the *tuberculated* and the *anæsthetic*. The loss of sensibility is not confined to the second form, but in it the anæsthesia generally occurs earlier, and is more marked, than in the first. As the two forms not unfrequently coexist, or succeed one another in the same patient, they must be regarded as merely modifications of one morbid condition.

As varieties of non-tuberculated leprosy are included cases sometimes designated as *leucopathic*—characterized by white spots or blotches on the skin, which are more or less decidedly anæsthetic; also cases in which the eruption

is in circular or annular spots, similar to that of *lepra vulgaris*, but in which the centre of the spots is anæsthetic, while other distinctive marks of leprosy are present. The term "leprous" is often applied to various chronic maladies of the skin occurring in unhealthy persons, who are badly nourished, and neglectful of cleanliness, but which cannot be regarded as true leprosy. Elephantoid enlargement of the lower extremities is, in some places, considered as allied to leprosy. The two diseases would appear to have, however, no real affinity with each other, although both are sometimes endemic in the same countries, and occasionally coexist in the same patient.

2. The development of leprosy appears to take place most frequently about puberty, and from that period of life to maturity; but it has been observed in infancy and early childhood, and to fifty years and upwards. Rarely have signs of it been seen in the children of lepers at or soon after birth. The tuberculated form is said to generally manifest itself somewhat more early in life than the non-tuberculated.

Arrest of development, and various forms of congenital deformity, are said to be the occasional results of a hereditary tendency to leprosy.

The external symptoms of leprosy are often preceded by a sense of malaise—recurrent, ague-like chills, occasional feverishness, a sense of internal heat; pains, or creeping, pricking sensations, or formication and itching of the limbs; numbness of a hand or foot, or in one or more of the fingers or toes; general weakness and depression of both mind and body. In certain cases, especially of the non-tuberculated form, there is in the early stage an intense burning sensation, and a painful tingling along the course of one or more of the nerves of a limb, increased by pinching the skin or tapping over the affected part. It is sometimes accompanied by a dry, fissured state of the skin, falling off of the hair, and shrivelling of the nails.

Before the appearance of the characteristic cutaneous tubera or nodules of the tuberculated form, there not unfrequently occurs an erythematous redness, most generally of the face, attended with a feeling of heat or burning—a puffiness of the features, and increased sensibility of the skin, which latter symptom is invariably replaced, sooner or later, by anæsthesia of the affected parts. Excessive perspiration of the hands, when present, is an evidence of the leprous diathesis, if not of the actual disease.

3. Taking the disease as a whole, when not extensive, it may continue for twenty years or more; but from five to fifteen years may be set down as its most usual duration. The non-tuberculated form is most usually the slowest in its progress. In both forms, however, it may remain stationary for years, life being occasionally prolonged to old age. Death is generally the result of some intercurrent disease; in malarial districts, especially of intermittent or remittent fever. In some cases the patient sinks from general marasmus and atrophy. Children of leprous persons are observed to be less amenable to medical treatment than the children of other parents when sick, of the same age and condition.

4. It has been supposed that leprosy occurs most frequently in males. In some leper asylums in the West Indies the number of the two sexes received is about equal; while several observers are of opinion that the disease is equally common among females as among males; a few, again, state that it is most common among the former.

5. In hot climates leprosy appears to be much more frequent among the dark than among the white population. Most of the cases among the latter occur, it is said, in such as are born in the country, or have long resided in districts where the disease is endemic.

6. In all countries the disease prevails chiefly among the most debased and poorest of the people; the better conditioned classes are, however, not exempt from it.

Leprosy appears to prevail chiefly in low malarial districts, especially on or near the sea-shore; but it is by no means confined to such localities. Lepers are more frequently to be met with in towns than in rural districts. The dwellings of the classes amid which leprosy is most prevalent, are everywhere of a character the most miserable, filthy, and unwholesome. The personal uncleanness of lepers is on a par with that of their abodes. Their food is very generally

poor, unnutritious, and otherwise unwholesome—badly cooked, also, and often quite insufficient in quantity.

7. All observers agree that an unwholesome and insufficient diet, exposure to atmospheric vicissitudes without sufficient clothing—residence in foul, damp dwellings, improper diet, and the want of personal cleanliness, serve to aggravate the disease and accelerate its progress; while, on the other hand, it is greatly retarded and mitigated by more favourable hygienic conditions. Intemperance, sexual excesses, the depressing passions—in short, whatever tends to lower the vital energies, and to impoverish or deteriorate the blood, are always hurtful. Among other circumstances said to aggravate the disease, is included the incautions use of mercury, which has often been employed in its treatment.

8. It is almost universally conceded, that leprosy is often hereditary; it nevertheless frequently occurs in those in whom no hereditary tendency can be traced. The disease is stated not unfrequently to pass over one generation, and to reappear in the next.

9. Leprosy is very generally considered to be a disease *sui generis*, quite independent of, and unconnected with any other disease. The facts given in support of this position are seemingly conclusive.

10. The all but unanimous conviction of the most experienced observers in different parts of the world is in direct opposition to the belief that leprosy is contagious or communicable by the closest proximity or contact with the diseased.

11. Of course, segregation of the leprous is not necessary to prevent the spread of the disease. Properly constructed and located asylums, however, in which lepers could be received and placed under favourable hygienic conditions, will be probably the only certain means for effecting their cure.

12. The public provision for the cure and treatment of the leprous poor, where the disease prevails, is almost invariably scanty and insufficient.

13. As to the number of leprous persons maintained at public expense, no positive information has been received. The statements given are too few and imperfect to afford any criterion of the extent to which the disease exists among the poorer classes of the several communities heard from.

14. In respect to the question whether leprosy has of late years increased or decreased in its several habitats, no accurate conclusion can be arrived at, from the want of trustworthy statistical data.

15. It is admitted on all hands that in the treatment of leprosy the best effects have been derived from the adoption of hygienic measures; that medicinal treatment is of no avail in retarding or arresting the disease, unless combined with a nourishing, unstimulating diet, suitable clothing, protection against atmospheric vicissitudes, personal cleanliness, and exercise in the open air.

The medicines which have been found most useful are tonics and alteratives; of these, the preparations of iron and of iodine are the best. Arsenic, recommended by some, is of more doubtful utility. The oil of the *chaulmoogra* and cod-liver oil are said to have been given with advantage—as also sarsaparilla, mudar (*calotropis*), and other reputed vegetable alterants. Mercury is of very doubtful propriety.

The systematic use of baths—simple, saline, or sulphuretted, appear to be decidedly beneficial. Counter-irritation over the spine by the actual cautery has proved useful, it is said, in diminishing the anæsthetic symptoms.

The evidence is all but unanimous that leprosy very rarely, if ever, manifests any tendency to a spontaneous cure. When fully developed, a complete recovery is not to be looked for.

16. This query relates to the census of the West India Islands subject to the occurrence of leprosy. The answers given to it are far, however, from being complete or satisfactory.

17. The reports of post-mortem examinations made by Dr. Carter of Bombay, of leprous patients, are of considerable interest. They tend to confirm the general accuracy of the researches of Drs. Danielssen and Boeck in respect to the morbid anatomy of the disease. These gentlemen were the first to investigate this field of pathological inquiry. The following is a brief summary of the

principal morbid changes which they detected in the numerous dissections of leprous patients made by them in the hospital at Bergen.

Tubercular form.—In the developed stage, the cutis vera of affected parts tumefied and thickened. When squeezed between the fingers a yellowish white, viscid or gristly fluid exudes. Subcutaneous cellular tissue, infiltrated with a gelatinous or lardaceous effusion, firmly adherent to corion. Subcutaneous veins and nerves thickened and enlarged from the same effusion on their outer surface. In the advanced stage both the deep-seated and superficial nerves, especially in the neighbourhood of ulcerations, very much thickened and enlarged, in consequence of inflammation of their sheaths. Mucous membrane of nares, fauces, and larynx swollen, occupied with tubercles, soft, yellowish in colour, and often ulcerated. The opening of larynx frequently the seat of morbid deposit, nearly closing up, sometimes, the *rima glottidis*. Tubercles occasionally occur on mucous lining of trachea and larger bronchi. Cervical glands, in some cases, much enlarged. Substance of lungs seldom altered; pleura often much thickened from tuberculous deposits in its cellular tissue. A similar condition may occur in the subperitoneal cellular tissue. On the inner surface of intestines, isolated, rounded ulcers are occasionally present. Mesenteric glands generally more or less enlarged. Liver sometimes the seat of tubercles. In the advanced stage of the disease kidneys almost always more or less seriously affected, usually with the results of albuminous nephritis present. Within the cerebral and spinal cavities no distinct or uniform morbid changes are detected.

Asthenic form.—When completely developed, with decided paralysis of muscles and skin, the latter is often much attenuated—all the fatty matter gone. Substance of muscles atrophied; cellular tissue surrounding seat of ulceration or necrosis, infiltrated with a serous or lardaceous deposit. The nerves traversing the infiltrated tissue, and those deeper seated excessively swollen, their sheaths filled with a firm albuminous matter in which the ultimate nervous filaments are imbedded; alterations precisely the same as those found in the tuberculous form of the disease, and supposed to be the result of inflammation of the nerves. The axillary and inguinal glands are, at the same time, often much enlarged. The lesions of the nervous centres, which are present in most cases, are chiefly congestion of the posterior or dorsal veins of spinal marrow, effusion of an albuminous serum within arachnoid membrane and the dura mater; adhesion of arachnoid membrane to pia mater; consolidation or hardening of substance of spinal cord at part affected. Cord usually somewhat contracted in size; so atrophied, sometimes, as not to be larger in diameter than a quill. The cineritious substance has acquired a dirty yellow colour, resembling a good deal the medullary substance. The roots of the nerves within the spinal canal invested with albuminous exudation. Sometimes the axillary and ischiatic plexuses, and the principal nerves issuing from them, are visibly atrophied. The above changes are always most conspicuous in the cervical and lumbar portions of the cord. Within the cranial cavity the same changes occur as in the spinal, but in a far less decided or advanced degree. Whenever well-marked facial anæsthesia has been present, the Casserian ganglion has been found the seat of some change. The most marked morbid change in the condition of the blood of leprous patients is an excessive amount of albumen and fibrin. The same sanguineous dyscrasia is found in both forms of leprous disease, the tuberculous and anæsthetic.

D. F. C.

ART. XXI.—*On the Physiological Action of the Calabar Bean (Physostigma Venenosum, Balfour)*. By THOMAS R. FRASER, M. D., Assistant to the Professor of Materia Medica in the University of Edinburgh. From the Transactions of the Royal Society of Edinburgh. Vol. XXIV. Quarto. pp. 73. Edinburgh, 1867.

THE Calabar Bean, though known as a judicial poison of the negroes of the west coast of Africa, did not attract attention on the part of the medical pub-

lie until the discovery of its power of contracting the pupil of the eye. In 1855 Dr. Christison, in a paper published in the proceedings of the Royal Society of Edinburgh, directed the attention of physiologists to some of its remarkable properties. Since then it has been experimented with by ophthalmic surgeons, and numerous notices will be met with in the journals. The last edition of the *British Pharmacopœia*, recently published, contains this substance in the list of official articles of the *Materia Medica*.

The paper now under consideration contains the results of Dr. Fraser's experiments to determine the mode of operating upon the animal system possessed by this remarkably energetic poison. In presenting this account of his investigations, the author does not conceive that they are exhaustive, and states that "the effects which follow the topical application to the eyeball will be merely alluded to in this paper, as this portion of the subject has not been completed. Enough has, however, been done to convince me of the insufficiency of the views hitherto advanced, and to suggest the advisability of extending my observations."

In 1863, Dr. Fraser obtained from the kernel and the spermoderm of the bean a peculiar principle, having the peculiarities of an alkaloid, and with it a crystalline acid resembling tartaric. To the principle he gave the name of *Eserinâ*, derived from the word *Eserë*, by which the bean is known in Calabar. In his experiments, the alcoholic extract was employed. As this extract contains some oil, and as it is also hygroscopic, in conducting the experiments, the quantity was definitely weighed from such as was kept in an exsiccator. The experiments were made upon frogs, birds, and animals, and it was "found that fatal results were produced with the smallest quantity on birds; and that the largest doses in proportion to weight, were required by amphibia." A dose of $\frac{1}{8}$ of a grain proved rapidly fatal to a pigeon, while a frog bore three grains of the extract and recovered. In his previous paper of 1863, published in the *Edinburgh Medical Journal*, Dr. Fraser showed that the more rapid the absorption of the poison, the more quickly are its fatal effects produced, and that the active principle may be absorbed by any living tissue. From digestion in the gastric juice there does not appear to be a loss of effect in the active principle of this bean; thus, after having been digested for twenty-four hours in the gastric juice of the dog and purified, it produced contraction of the pupil, when applied to the conjunctiva. There is another fact presented in connection with the stomach which is interesting. When injected into the jugular vein of a dog to the extent of five grains and the stomach immediately removed after death, the contents, with the scrapings of the mucous coat, were properly treated and reduced to the state of extract. A minute portion of this produced contraction of the pupil. This is in accordance with the statements of Dr. Brinton and Dr. Taylor with respect to the excretion of poisonous substances.

The following phenomena are presented when poisonous doses of physostigma are given to mammals: "When a small fatal dose is administered to one of the lower animals, a train of symptoms is produced usually in the following order: A slight tremour is first seen, especially at the posterior regions, and this extends forwards to the anterior extremities and to the head. The limbs yield immediately afterwards, the posterior becoming generally first paralyzed, and the animal lies extended in a state of almost complete muscular flaccidity. A few attempts may be made to recover the normal position, but they are usually ineffectual. The bowels in most cases are evacuated and urine is passed. The pupils generally contract; as the symptoms advance, the respiration becomes slow and irregular, with a distinct stertor accompanying both inspiration and expiration, and frothy mucus escapes from the mouth. Muscular twitches occur and often continue after respiration has ceased. Reflex action cannot be produced by either pinching or pricking the skin. By and bye the eyelids do not contract when touched or even when the eyeball is pushed. On lifting by the ears, the limbs hang quietly, and the only sign of life is an occasional gasping inspiration, which also soon ceases, and the animal appears dead."

Consciousness is preserved during the whole time, until the power of expression is lost. During incomplete paralysis, proofs of sensation may be obtained

by pinching the ears or pricking the skin. Immediately after death the pupils dilate.

On opening the body, the various muscles which are cut contract. The diaphragm and muscles of the extremities may be excited to action by pinching the phrenic and sciatic nerves, and the contractility of the muscles generally is retained for some time after death. The heart is found acting regularly and the intestines exhibit vermicular action. The heart may continue its action for one hour and a half after death. Its chambers usually cease to contract in a definite order, the left auricle first losing its spontaneous action, then the right and left ventricles, and after an interval the right auricle. The large veins in the thorax are found distended. The lungs are engorged—in two experiments this proceeded to such an extent that detached portions sunk in water.

When a large fatal dose of the kernel is administered, the hind limbs almost immediately yield and the animal falls. It lies flaccid and in any position on the table, and exhibits muscular power only by a few twitches. The pupils contract; in a few cases fluid escapes from the nostrils and mouth, and the lachrymal secretion is increased. Reflex action cannot be produced by irritation, and the respiration, after a few gasps, ceases.

The pupils dilate immediately after death. On opening the body, muscular twitches occur. The heart is found distended and passive; irritation, however, produces contraction for about ten minutes after death. The vermicular action of the intestines is very much diminished, and can scarcely be observed.

The mesenteric arteries and veins may be readily distinguished by the colour of their contents.

Phenomena similar to the above were observed in the cold-blooded animals, as frogs.

From the exposition given of the effects of the physostigma, the evidence is presented that it is a decided paralyzer, and it becomes an interesting inquiry wherein consists its especial potency, or on what structures is its force expended. The several points involved in this investigation are taken up separately by the author, and—

1st. *The Action on the Voluntary Muscles.*—"A full-grown rabbit had injected into the subcutaneous tissues of its flank three grains of extract in water. Tremours occurred in two minutes, the anterior members soon yielded, and in four minutes and thirty seconds the animal fell, the muscular trembling having increased in vigour, and having become general over the body. Respiration ceased in five minutes after the injection, but muscular tremours continued during other three minutes. When the thorax was opened, the heart was found dilated and passive. In twenty-four minutes galvanic stimulation of the sciatic nerves caused powerful muscular contractions; within thirty-six minutes, these nerves were completely paralyzed, though application to the voluntary muscles of the electropodes produced marked contractions. Though weaker and weaker, these contractions continued for an hour and thirteen minutes after the administration of the poison. The general result with warm-blooded animals was the same; muscular contractility remained after the destruction of the function of motor nerves; and this also occurred with the frog." The experiment proved the absence of any paralyzing effect through the blood or striped muscles.

Rigor mortis is delayed for an unusual period after apparent death in cold-blooded animals, and in mammals and birds is not hastened. In both classes this change in the condition of the muscles is only indirectly affected by this substance and through the influence on the cardiac contractions. When the blood supply of the muscles is stopped their function is suspended and rigidity follows, but the resulting rigor does not seem to be due in any other than this indirect method to the action of physostigma. The above statement is shown by the following experiment: "The right iliac artery of a frog was tied, the poison was then introduced into the skin of the shoulder. In a few minutes general paralysis existed, and the skin of the tied limb was paler. In an hour and twenty minutes, the sciatic nerves being exposed, it was found that the left was completely paralyzed, while galvanism applied to the right nerve, or that of the protected limb, produced active muscular contractions. The muscles of the tied limb were pale as contrasted with those to which the poison had access, and

the latter were distinctly blue in colour. The non-poisoned muscles continued active until forty hours, and at forty-nine hours they were acid and stiff and did not contract when galvanized. In the poisoned parts the functions of the motor nerves were destroyed in three hours and ten minutes, the non-poisoned or right sciatic continued active until thirty-two hours. It was possible to distinguish the heart's impulse on the thoracic walls and to determine the frequency of its contractions, and at the end of three days fifteen feeble beats per minute were occurring. The circulation was maintained for eighty hours as demonstrated by the microscope." During all this period the muscles were everywhere, except in the tied limb, flaccid, blue, and of alkaline reaction and contracted, though latterly with diminished vigour, when galvanized; those of the tied limb were now putrefying. In one hundred hours the poisoned muscles had lost much of their blue colour and contracted slowly and partially. In one hundred and twenty hours they were slightly stiff, and galvanism produced merely a slow surface depression at each electrode. Such contraction could still be obtained more than five days after the injection of the Calabar. A similar dimpling could be produced on the heart long after it had lost its power of spontaneous contraction.

From his experiments, the author's conclusion is in opposition to that of Mr. Nunneley, that the poison produces paralysis of the striped muscles, for it appears that ideomotor irritability is the last vital property to disappear in death by Calabar bean. Its loss is only caused indirectly, as this is due to the cessation of blood supply which is necessary for its manifestation.

In the experiments with mammals and birds an early and constant symptom was the occurrence of successive muscular contractions of a non-coördinate character. This varied in accordance with the rapid or slow introduction of the substance; in some cases it was so strong that the animal appeared as if under the action of a tetanic. The twitches became more marked when the poisonous effects were fully developed; they gradually diminished in strength as death approached, and continued in a slight form for many minutes after it. Exposure of muscles to the air and irritation with a knife, during autopsy, increased the strength of their contractions, and even originated them in muscles and parts of muscles from which they had disappeared, and it was then observed that the whole of a muscle seldom twitched at once, but portions of it separately in succession. When a muscle was removed from the dead body these twitches were continued.

2d. *Action on the Cerebrum.*—So far as paralysis is concerned, it is not produced by any action on the cerebrum.

3d. *Action on the Motor or Efferent Nerves.*—In experiments frequently repeated, it was found that the motor nerves were not paralyzed before the respiratory movements had ceased, although it occurred that the motor nerves were paralyzed immediately after the cessation of respiration. The interval during which they remain active varies greatly in different animals and in the same animal according to the dose of the poison; in the latter case, as thought by the author, in an inverse ratio. From experiment, Dr. Fraser differs from Harley that physostigma is a respiratory poison only, and that the early production of asphyxia is caused by paralysis of the motor nerves. These nerves were directly amenable to galvanic influence, although no reflex action could be produced. The excitability of the motor nerves is, however, ultimately lost from the influence of the poison, as shown by protecting the sciatic nerve by ligature of the vessels on one side—when its conductivity was continued five hours—in a frog, longer than that of the opposite limb into which the poison had penetrated. In losing the motor conductivity, the question arises with respect to the destructive impression on the trunk of the nerve or on its "end organs (peripheral terminations). To determine this, the following experiment was performed:—

"Immediately after the left ischiatic artery and vein were tied, two grains of the extract were placed in the back of a frog. Before twenty minutes respiratory movements had ceased, while the heart was beating rhythmically at the rate of thirty beats per minute. One hour after the administration of the poison, the right (or poisoned) sciatic nerve was exposed and found active, but

in other twenty minutes strong galvanism applied to any portion of its trunk could not produce contractions in the muscles to which it was distributed, and an examination of the brachial nerves proved them also to be paralyzed. The left sciatic nerve was, however, perfectly active. When it was galvanized, movements confined to that limb were produced in the muscles below or distant from the ligatures. *These ligatures were on the thigh; but stimulation of the nerve above them, or of the lumbar nerves of the same side, was followed by energetic muscular contractions below the points of the ligature.*"

A further experiment was made by isolating the gastrocnemius muscle and cutting off its circulation, retaining its nerve connections; when it retained its power of contracting after it was lost in the other muscles of the same leg and of the animal which were not protected.

From these the conclusion is that physostigma produces paralysis of the peripheral extremities of the motor nerves, and in this respect it is in the same category of substances as curara experimented with by Bernard, and conia experimented with by Kölliker. It is remarked, however, by the author that the peculiarity of the Calabar is in the necessity of prolonged contact with the nerve terminations, and a long continued circulation of the poison-bearing blood.

While the effect of the poison is to destroy nerve excitability or conductivity at the termination of the nerves, which is retained for a long time when the poison is excluded, the effect on ideo-muscular contractility is exactly converse, that property being uninjured by the mere presence of physostigma, but diminished and destroyed by stoppage of the circulation. From the experiment to determine another point, *i. e.*, the progression of the paralysis, it cannot be concluded that the motor nerves are paralyzed by a centripetal progression of the poison.

4th. *Action on the Afferent Nerves.*—The excitability of these nerves appears not to be affected so long as the spinal cord retains its diastaltic power. Instead of their excitability being diminished, it would appear to be actually increased. Here is another point of resemblance to curara.

5th. *Action on the Spinal Cord.*—From the detail of the foregoing experiment, it is clear that the paralysis with which animals are immediately stricken on administration of Calabar bean is not due to the effect upon the brain, or the muscles, or the nerves. By this process of exclusion there is no other seat of injury to be sought for but the spinal column. The following experiment is to the point.

"A grain and a half of the extract in fifteen minims of distilled water was injected into the abdomen of a small dog. The animal sustained the paralytic shock, and in eleven minutes all respiratory movement had ceased. The spinal cord was immediately exposed, and the strongest galvanism consistent with the localization of the current, applied to various portions of its substance, failed to excite any movements of the body. A sciatic nerve was then exposed, and slight stimulation of it produced vigorous contractions of the limb, but no reflex movements. The heart continued to beat." A variation of the experiment was performed on a frog, in which the left femoral artery and vein were tied, the poison introduced into the back. No reflex action of the limbs could be produced, and yet the galvanic stimulus was manifested in both the poisoned and unpoisoned nerves. These experiments were considered decisive, "for the diastaltic function of the spinal cord was completely destroyed, while the poisoned and non-poisoned motor nerves were in so equally active a condition, that the difference between the times in which impressions travelled along two portions of the same nerve, differing in length by one inch and a half, could not be measured in either, even by a delicate instrument specially adapted for this purpose." The effect of the Calabar bean would appear to be antagonistic to that of strychnia. This was determined by experiment. For when a frog was brought into a convulsive state by strychnia, the Calabar tetanic manifestations soon disappeared, and when poisoned by Calabar the strychnia did not produce convulsions. It is the opinion of the author that no other drug so directly diminishes reflex action, and is, therefore, so likely to be employed with advantage in tetanus as physostigma. The poison is considered to be a spinal paralyzer.

6th. *Action on the Heart.*—With a large dose, the animal dies by cardiac

syncope; with a smaller one, the heart beats are only diminished in frequency, and, as the circulation continues, the spinal cord is more and more affected, until its diastaltic function is destroyed and asphyxia caused. From carefully conducted experiments with respect to the reduction of activity in the heart's movements, the following summary may be presented: "1st. Diminution never preceded by increase of the contractions, with prolongation of the period of rest; 2d. Feebleness of the contractions, with no change of colour on the occurrence of systole; 3d. Irregularity of rhythm, the auricles contracting more frequently than the ventricles, and, for intervals, contracting alone; 4th. Stoppage of all the heart's chambers. If the poison be absorbed quickly and in large quantity, the fifth and sixth effects may not occur. 5th. Renewal of contractions, either by all the chambers at once, or by one or more in the first place; 6th. Gradual recovery to a low rate of action, and continuance at this from a few minutes to several days; 7th. Stoppage in diastole of spontaneous contractions; and 8th. Loss of the idio-muscular irritability of the heart, rigor, and change of reaction from alkaline to acid." The method of affecting the heart distinguishes this poison from antiaris, tanghin, digitalis, black hellebore, and the nereum oleander, which produce first irregularity and acceleration of the heart's action, then a diminished frequency caused by protraction of the ventricular systole, and finally stoppage of the contractions by cessation of the dilatation of the ventricles, which then remain contracted, white, and perfectly empty. In producing cardiac paralysis, physostigma acts in a manner exactly the reverse. It causes no acceleration, it diminishes the frequency of the contractions by prolonging the ventricular diastole, and produces the final stoppage by cessation of the contraction of the ventricles, which themselves remain dilated, dark, and full of blood.

The mechanism of the impression resolves itself into the influences of the cerebro-spinal nervous system, whether exerted through the vagi or the spinal nerves, or the possible influences of the sympathetic system, whether exerted through the great sympathetic trunks and their branches or through the ganglia contained in the heart's substance. Any effect on idio-muscular contractility has been disproved, but it will be necessary to observe how far the impairment and cessation of respiration may explain the cardiac effects in warm-blooded animals.

The paralysis of the heart in diastole, and the diminution in the frequency of its contractions by protracted periods of rest in a dilated condition, as well as the frequent renewal of its action after a long pause in diastole, might in the first place suggest that the inhibitory function of the vagi was being exerted. To determine this the following experiment was performed. "The heart and two vagi nerves in a frog were exposed; by galvanizing either of the nerves, stoppage of the heart's action occurred in diastole. The contractions of the heart were found to be 58 per minute. The extract (3 grs.) dissolved in a few drops of water was then injected into the two thighs, in equal proportions. In 10 minutes, the heart beating 36, galvanism of the left vagus produced stoppage in diastole. In 1 hr. 5 m. galvanism produced stoppage in all the chambers. In 1 h. 50 m. galvanism of the left vagus produced stoppage of all the chambers, and the heart remained at rest in diastole for ten minutes, when a feeble auricular contraction occurred, and soon after a ventricular; galvanism of either sciatic nerve caused merely faint twitches of the toes. In 2 h. 10 m. cardiac contractions, 18 per min., feeble but rhythmical. Strong and continued galvanism of the left vagus produced no effect on the contractions; this was also the case with the right vagus; the reflex action from the feet was lost; and at 2 h. 40 m. the heart stopped." From this experiment it is apparent that the vagi retain their inhibitory power over the heart during the whole period that its action is being modified by physostigma. Ultimately, however, they are themselves paralyzed, as might be anticipated from the analogies that exist between them and the spinal nerves, and the functions of the vagi and the spinal nerves are lost simultaneously, or nearly so. It is, therefore, quite possible, as far at least as conveyance by the vagi nerves is concerned, for Calabar bean to act on the heart by exciting the cardiac inhibitory centre in the medulla oblongata. But if this be the method of its action, the prevention of this pos-

sible influence by division or previous paralysis of the vagi, or by destruction of the medulla oblongata, should render it impossible for Calabar bean to produce its usual effect upon the heart.

To determine the above, the following experiments were performed: "The heart and the two vagi nerves of a frog were exposed, and the latter divided, and in a few minutes the cardiac contractions were found to be 66 per minute. Two grains of extract were then injected into each thigh. In two minutes cardiac contractions were 60 per minute; in forty-two minutes, after being reduced to nine beats, the heart stopped in diastole for thirty-five seconds." It continued to contract very irregularly for many hours afterwards. These experiments are deemed sufficiently conclusive that it is not upon the vagi that the effects are produced which lower and ultimately destroy the contractility of the heart; and the same facts are deduced from experiment upon the spinal centres.

To complete the evidence, it is shown by experiment that no connection of cause and effect necessarily exists between the impaired respiratory movements and the cardiac paralysis. Thus, in a dog, in one minute and thirty seconds after the poison was administered, the number of cardiac contractions had fallen to less than one-half, while the respiratory movements had increased by one per minute. It shows distinctly the absence of any respiratory change to cause the marked effects that were produced on the heart's action. As the arrest of the respiratory movements goes on, the action of the poison on the heart is assisted by impeding the circulation.

From the investigations thus set forth, it is the opinion of Dr. Fraser that the cardiac action of physostigma is quite independent of the cerebro-spinal nervous system, and is not a mere effect of the paralysis of respiration. It must, therefore, be caused by an action of a direct nature on the cardiac ganglia, which seem to be the only constant exciters of this organ, however its contractions may be regulated by other nerves. The peculiar changes that the heart's action undergoes, the diminution in the frequency of the beats, then their stoppage or irregularity, sometimes followed by renewal of the rhythmical contractions, or of independent movements in all the chambers or in one only, prove that Calabar bean first diminishes the vitality of the exciting ganglia, and then paralyzes them. It resembles digitaline and the extract of oleander.

7th. *Action on the Bloodvessels.* 1st. *Effect on Blood Tension.*—The results of experiments conducted for the purpose of determining this point were the following: During the first stage of poisoning, the arterial tension diminishes slightly, the venous tension arrives at a higher maximum rather later and by more gradual stages than the arterial, and in the same gradual manner declines until death. In neither system is the highest point reached before a very considerable fall has been caused in the frequency of the heart's contractions. The temperature rises during the poisoning, and attains its maximum near the time that the blood pressures have commenced finally to diminish.

By experiment, it was shown that the same effects are produced on the circulation, after the division of the vagi, as when these inhibitory nerves retain their connection with the heart. The action on the frequency of the heart's beats is well illustrated in this experiment, from their number having been considerably increased, before the exhibition of the poison, by the division of the vagi nerves.

The distance over which the mercury travels in the oscillating column seems to be increased as the effects of the poison manifest themselves. This appears from all the experiments in this series, but especially from the second and the last. The division of the vagi in the last experiment had abnormally diminished the distance of oscillation; and yet it became much greater after the poisoning than it had been previous to the nerve division. It further appears that this increase in the oscillating distance occurs when the arterial tension is about its maximum. It can only be explained by a very decided increase in the force of the cardiac contractions. Dr. Fraser believes that this effect on the heart is altogether a reflex one, due to the resistance to the propulsion of the blood that the augmentation in the general vascular tension must excite. In a normal condition, a stimulus of this nature might be expected to operate by increasing

the number and not the strength of the cardiac contractions, but any tendency to increased frequency is opposed by the action of physostigma, for we have already seen that this substance diminishes the number of the contractions by prolonging the diastolic pause. Their strength may, however, continue unchanged, and during the operation of physostigma a stimulus may even increase it without affecting the number of beats, so long as the ganglia that initiate the systolic contraction have their excitability merely lowered without being destroyed, and the contractile power of the cardiac muscle continues undiminished.

2d. *Examination of the Calibre Changes in the Smaller Bloodvessels.*—The action of Calabar bean on the minute bloodvessels of the frog's web is to contract them considerably first, and then dilate them. This is attributed to a specific effect on the ganglia and nerves that govern the calibre changes of the vascular system, because it is by their influence that the final dilatation must be produced.

In explaining the changes of blood tension in mammalians, Dr. Fraser believes that the slight fall that usually occurs in the mean pressure immediately after the poison has been exhibited is solely due to the diminution in the rate of the heart's contractions which has always been caused by that time. The subsequent rise in both arterial and venous tensions, before any considerable embarrassment of the respiration, may be satisfactorily explained by such contraction of the smaller arteries as has been demonstrated to occur in the vessels of the frog's web. It cannot be caused by increased cardiac pressure; for the heart is at the same time contracting with only one-half of its normal rapidity, or with even less, while the greater force of each heart beat the increasing oscillating distances appear to indicate is quite insufficient to account for the high degree of blood tension sometimes attained. The subsequent more or less rapid diminution of pressure in both arterial and venous systems is the evident result of the great dilatation in the minute bloodvessels, assisted by the weakening of the *vis a tergo* that this poison quickly produces.

The elevation of temperature in mammals poisoned by Calabar bean is inconsiderable; this is attributed to the general muscular contractions.

Action on the Blood.—The blood obtained from animals that have been poisoned by Calabar bean is generally dark in colour, because of the usual cause of death, but if drawn from the left side of the heart after a very large dose of the poison, it has the scarlet hue of arterial blood. It frequently remains semi-fluid for some time, and then clots loosely. In dogs and rabbits the red blood corpuscles are changed in form and present various irregularities of outline, among which a well-marked stellar crenation preponderates. No change is produced in the red corpuscles of birds or frogs, or in the white corpuscles of any animal. The respiratory function of the blood did not appear to be interfered with.

In twenty-one minutes the lymphatic hearts of the frog ceased to beat after the injection of the poison.

The effect upon the peristaltic movement of the viscera is similar to that on the capillary vessels. For some time the intestines move with increased vigour; they then contract so as very considerably to diminish their calibre, and finally they assume a condition of dilatation with lessened movement.

The marked effect which attracted attention to the Calabar bean is contraction of the pupil. Discussion is still exercised in explaining the contraction and dilatation of this structure. Without pretending to settle this question, Dr. Fraser, from his experiments, accedes to the belief that the cause of pupillary contraction during poisoning by internal administration is in all probability to be found among those consequences that naturally succeed the removal of the influence of the cervical sympathetic nerve, but irrespective of paralysis of the radiating fibres of the iris, is disposed to attribute something to the static condition of the bloodvessels of the eye.

With respect to the effects when topically applied to the nerve centres or nerves, when absorbed, the same paralytic effects were induced, but when locally applied to nerves their functions to this extent of application were destroyed. The local effect on muscles, whether striped or unstriped, is to destroy their excitability.

The topical action upon the eye manifested by contraction is as decided as when the article is introduced into the circulation; and what is extremely interesting, one pupil may be thus contracted by physostigma, while the other is dilated by curara. The explanation of the difference of operation between these two substances is one of great interest. J. C.

ART. XXII.—*Lectures on the Progress of Anatomy and Surgery during the Present Century.* By SIR WILLIAM FERGUSSON, Bart., F.R.S., etc. etc. 8vo. pp. xii. 302. London: John Churchill & Sons, 1867.

THERE are few books from reading which we have derived more pleasure or more profit than from this, by Sir William Fergusson. Many of our readers are doubtless already familiar with these lectures, through their publication in the *Lancet* for 1864 and 1865 (from which periodical they are now reprinted), and with the twelfth especially, from its having been republished in the number of the *Medical News and Library* for September of the latter year named.

Since the death of Brodie, Sir Wm. Fergusson may perhaps be justly considered as the representative man of English surgery, and certainly no one can listen to his teachings as embodied in the volume before us, without feeling an ever-growing admiration for his eminent skill and acquirements as a surgeon, as well as for that trait which most adorns (unhappily too rarely) the character of a great surgeon, his sincere and unfeigned modesty, both as a writer and as a man.

These lectures were delivered before the Royal College of Surgeons of England, during the years 1864 and 1865, in the discharge of the author's duties as Professor of Anatomy and Surgery to that body. The first lecture is introductory, and the remainder treat respectively of the following subjects: on conservative surgery, on hare-lip and split-palate, on lithotomy in children and on lithotripsy, on excision of the knee (two lectures), on minor surgery, on lithotripsy, on lithotomy, operations on the jaws, on amputation, and on operations and practical surgery.

Our readers may easily perceive, from the above summary, the importance and scope of the author's remarks; and we doubt not that they will agree with us, that anything upon these subjects which Sir Wm. Fergusson thinks it worth while to teach, it is certainly worth while for all who practise surgery to attentively heed.

It is a trite remark that there is no surer proof of ignorance or mere superficial information than a pretension to universal knowledge; he that strives to excel in all things will generally fail of eminence in any. On the other hand, the man who honestly confesses his want of skill in certain branches of scientific instruction, may usually be trusted as to his acquirements in those which he does profess to have mastered. Accordingly, we are not at all surprised to meet with the following modest statements of Sir Wm. Fergusson, with regard to the recent advances in certain specialities of modern surgical practice.

"The application of the stethoscope to surgical diagnosis, the exclusive use of the microscope in pathology, the invention of the laryngoscope and its recent application in practice, are all interesting features in modern surgery. The ophthalmoscope, too, is one of the most ingenious and clever inventions for which surgery is indebted, nor can there be a doubt that, in special cases, the speculum is also of vast service. But I must leave it to greater enthusiasts, and those more skilled than myself, to dilate upon the marvels divulged by these instruments, and to fix upon their relative value as additions to the surgery of the present century.

"Ophthalmic surgery has made wonderful strides within our own time; but I do not profess myself competent to dwell on such a theme. It is pleasing to see that those who excel in this department, particularly amongst ourselves, are gentlemen who from their education and competency, are fitted to hold the

highest places in general surgery, and that many of them have held, and now hold, the foremost rank in our profession. Let me here express a hope that some future professor in this chair may be able to say as much for all who may devote themselves to the specialities of modern custom."

It will perhaps surprise some of our readers to hear that the term "conservative surgery" with which we are all now so familiar, had its origin not more than sixteen years ago; it was first used (we are told on page 34) by our author in a paper published in the *Medical Times and Gazette* for January 3, 1852.

It is not our purpose to attempt any analysis of these excellent lectures. They should be read and carefully pondered by every practical surgeon. A writer whose name we cannot recall, has compared medical literature to wine; the productions of young authors and experimenters may be pure and sound, but they have a certain sharpness and immaturity which can rarely be concealed. The writings of a senior in the profession, are on the other hand (if of good quality), characterized by a mellowness and fulness of body, like a venerable madeira or a crusty old port. Let us say that whoever has recourse to Sir William Fergusson's cask, will obtain an article of unsurpassed excellence.

The one hundred and nine wood-cuts which illustrate the volume before us, no doubt looked very well in the pages of the *Lancet* where they first appeared; we must confess, however, that they present rather a dreary contrast to the large type and white paper with which the publishers have issued the text. The edges of the book are all trimmed in the American fashion—a fashion which we have never been sufficiently utilitarian to think a good one. J. A., JR.

ART. XXIII.—*Syphilitic Affections of the Nervous System, and a Case of Symmetrical Muscular Atrophy, with other Contributions to the Pathology of the Spinal Marrow.* By THOMAS READE, M. B. T. C. D., L. R. C. S. J. 12mo. pp. 111. London: John Churchill & Sons, 1867.

THIS small volume is made up mainly of three papers, which were published in the years 1851 and 1852, in the *Dublin Quarterly Journal*. One of these papers had been offered for publication as early as 1847, at which time the *Journal* was under other editorship, but was not accepted on the ground of the matter not being original.

Mr. Reade has encountered, in the course of his practice, some twelve cases of disease where the nervous system was affected in various ways—where there was a history of venereal infection, and where, by the use either of mercurials or of the iodide of potassium, the affection of the nervous system was cured or greatly relieved. These cases he has published as cases of *syphilitic meningitis*.

While these cases were under observation the patients were submitted to the examination of surgeons holding most prominent positions in Great Britain, who did not agree with Dr. Reade as to these cases resulting from a syphilitic cause.

The nervous system was not believed by them to be affected by syphilis. *Syphilitic meningitis* is not the proper name to give to the pathological condition, but no one at the present day should question the syphilitic origin of symptoms such as those described in the cases related by Dr. Reade. To have recognized this origin however in 1837, which is the date of the first case, shows considerable powers of original observation, or else more knowledge of old writers than is generally possessed.

John Hunter taught that the brain was not attacked by syphilis, and this was held to be true by his followers—that is, by all British surgeons in prominent position during the first half of this century. Ricord, in his edition of the French translation of Hunter (Paris, 1847), makes no mention of affections of the nervous system. We have, however, heard him speak of such affections in lectures delivered in 1851, and in those published in the *Lancet* in the year

1848 he refers to them, though very briefly. He says, for example, that he has found such tumours (gummy) in the brain, and that M. Cullerier has reported a case where this organ was similarly affected. Subsequently, when speaking of the action of lesions of the osseous system upon neighbouring parts, he says that paraplegia may be produced also by an elastic tumour, and adds that it is important to diagnose between this and osseous lesion.

During the past few years nervous affections of a syphilitic origin have been a good deal written about, and the subject being one of great interest and importance, and yet scarcely referred to in works upon venereal diseases, it may be well to give some notes, to aid persons desirous of investigating it further.

Zambaco, an *interne* of Ricord at the Hôpital du Midi in Paris, in 1862 published a work entitled *Des Affections Nerveuses Syphilitiques*. This is a very comprehensive essay upon the subject, and obtained the Civrieux prize at the Academy of Medicine. Professor Jaksch has written upon syphilitic paralysis in general, and especially hemiplegia and paraplegia; a *résumé* of his views is contained in the *Biennial Retrospect of Medicine, Surgery, and their Allied Sciences* for 1865-6, published for the New Sydenham Society. In an article by Dr. Pierreson on Facial Diplegia, in the *Archives de Médecine* for August, 1867, is the following case, taken from *Virchow's Archives* for 1858: A man contracted syphilis, roseola; three months after, diplopia; and three months after that, facial paralysis, with difficulty of swallowing. After death, "between the bulb and the meatus of the internal auditory canal was found a thickening of the pia mater, with an exudation. The nerves, whose paralysis had been noted during life, were comprised in the thickness of the exudation."

In the admirable papers upon Nervous Affections, of Dr. Hughlings Jackson, in the *Reports of the London Hospital*, syphilis is several times spoken of as a cause of such affections. In the lectures on hemiplegia, in the second volume, hemiplegia from syphilis is given as one of six pathological varieties of that affection, and this important observation is made, that the kind of hemiplegia we see most often in syphilis is paralysis of a part of the face, partially of the tongue, and of the two limbs, all on the same side, which we have in disease of the corpus striatum and the thalamus opticus (*loc. cit.*, pp. 312-13). We cite from a paper by the same author, in the first volume of these reports, the following important remark upon the pathological anatomy of this affection: "So, too, we find that 'diseases of the nervous system' are not always diseases of the nervous tissue; but often of other tissues which enter into the composition of nervous organs, of bloodvessels, connective tissue, &c. Now, it is a well-known fact that syphilitic deposits are generally found on the surface of the brain. They begin in the pia mater, and *extend* into the nervous mass; in short, they affect the connective tissue where it is in bulk. There is, although this is denied too, connective tissue in the substance of the brain itself, but I never saw deposits unconnected with the pia mater; the reason being, probably, the simple one, that there is very little, if any, connective tissue in the central masses of the nervous system." This, as Dr. Jackson goes on to say, it is important to know: "We cannot treat an organ like the corpus striatum, but we may prescribe for a patient who has syphilitic disease of the connective tissue, wherever it may be."

J. Lockhart Clarke, in a valuable article in the first volume of *St. George's Hospital Reports*, says: "Syphilis, again, is a disease which may occasionally give rise to symptoms so nearly resembling those of locomotor ataxy, as to be somewhat perplexing in diagnosis. Thus, syphilitic affections of the periosteum, or of the membranes of the base of the skull, may paralyze any of the cerebral nerves, and produce strabismus, diplopia, ptosis, or amblyopia. Periostritis, as is well known, is a common cause of severe pains in the extremities; and exostoses, periosteal swellings in the vertebral canal, and syphilitic deposits in the membranes of the cord, may be productive of pains, formications, anæsthesia, and even unsteadiness of gait." (*loc. cit.*, p. 100.)

In Mr. Hutelinson's remarkable papers on "Inherited Syphilis," in the *London Hospital Reports*, are most interesting examples of affection of the nervous system.

We said that for an English surgeon to have recognized the syphilitic origin

of nervous affections, in 1837, shows considerable powers of original observation, or else an unusual acquaintance with old writers. Let us turn to the latter a moment. Van Swieten, in his Commentaries, says that in venereal disease he has seen the worst kind of epilepsy, blindness, deafness, &c. "Cerebral lesions," he adds, "are often observed in inveterate syphilis, from the mildest vertigo to deadly apoplexy." (vol. v. p. 371, Paris, 1773.) Boerhaave, in the aphorism upon which Van Swieten is commenting (§ 1445), says: "Possunt oriri tumores gummosi, et exostoses in calvarie osseæ parte internâ, quæ premendo cerebrum, omnes ejus functiones turbant." Long before this, however—in fact, soon after syphilis was known—nervous affections were described. Astruc quotes Dionysius Fontanonos, who flourished at Montpellier in 1526; in his work upon the Practice of Medicine, printed at Lyons, in 1550, he has a chapter *De Cephalalgia a Morbo Gallico*, and proposes mercury to cure it. (Astruc, p. 464, Paris, 1736.) Astruc himself speaks of vertigo, epilepsy, convulsions, trembling of the limbs, hemiplegia, paraplegia, and partial paralysis, as arising from syphilis. (See pp. 295, 316, 317.)

In none of the cases recorded by Mr. Reade was there an opportunity of verifying the diagnosis by a post-mortem examination. It is taken for granted by him that this is made certain by the history of the symptoms, and, above all, by the good effects following the use of mercury. We call attention to this fact, for there is too general an inclination now-a-days to question the power of mercury in venereal affections. Brodie's remark on this point, in his lecture on the administration of mercury in syphilis, is a good one, and is true of many things concerning that disease: "You must not suppose that we have made an advance in all departments of surgery; on the contrary, I am sure that in some we have gone back." It is worthy of notice that at a discussion on the employment of mercurials in syphilitic therapeutics, recently held in the Society of Surgery in Paris, only one, or at most two of the members spoke against this treatment, "*consacré par une expérience trois fois seculaire*," as one of the members very justly styles it. (See *Archives de Médecine* for August, 1867.)

W. F. A.

ART. XXIV.—*A Practical Treatise on Shock after Surgical Operations and Injuries, with especial reference to Shock caused by Railway Accidents.* By EDWIN MORRIS, M. D., F. R. C. S. (Exam.) &c. 12mo. pp. 89. Philadelphia: J. B. Lippincott & Co., 1868.

"Ὅτι Καλλιμάχος ὁ γραμματικὸς, το μέγα βιβλίον ἴσον, ἔλεγεν, εἶναι τῷ μεγάλῳ κακῷ." ¹ ATHENÆUS, *Deipnosophist.* Lib. iii. c. 1.

"He that increaseth knowledge increaseth sorrow."—*Ecclesiastes* i. 18.

Had Dr. Edwin Morris's "treatise" been submitted to Callimachus the grammarian for review, that ancient critic, at least, could not have complained that it was a *great* evil, for in spite of its slightly pompous title, it contains less than eighty small pages of reading matter. Nor, did the Preacher preach in our days, could he justly reproach Dr. Morris with adding to the already too heavy load of human sorrow; for there is nothing in his book, so far as we have found, which is not already known to every ordinarily well educated surgeon. The author states in his preface that his "treatise" is "the result of the experience of six and twenty years," and that he has not yet finished his labours in this department. Let us hope that he may not painfully verify those other words of the Preacher, "Of making many books there is no end, and much study is a weariness of the flesh."

Dr. Morris, in the very first sentences of his volume, strangely confuses the *shock* (properly so called) which follows injuries, with the widely different effects of mental emotion; forgetting, apparently, that some of the most severe cases

¹ Callimachus, the grammarian, used to say that a great book was equivalent to a great evil.

of shock ever met with, are in patients whose mental and moral condition remains totally unmoved by the injuries which they may have received.

The first half of Dr. Morris's book gives a number of very good but somewhat familiar quotations from the writings of surgical and other writers, not omitting a reference to the history of that wearisome though brave officer in the camp of the Duke of Alva, upon whom the Provost Marshal played such a shameful practical joke. At the foot of page 15 are printed four lines of most unpoetical and ungrammatical nonsense, which are unkindly attributed to Lord Byron. We feel very confident that the illustrious author of "The Prisoner of Chillon" could never have been capable of writing such stuff, which is indeed of the kind that "neither gods nor men are said to permit."

Pages 48 to 70 are principally occupied with what we must consider a most discourteous and uncalled-for attack upon Mr. Erichsen, on account of his recently published essay "On Railway and other Injuries of the Nervous System." Fortunately Mr. Erichsen's position, both as a surgeon and as an author, is too well established to be in danger from the animadversions of the writer of the present "Treatise on Shock."

The last portion of the volume deals with the treatment of shock, and we will do the author the justice to say, that if we have not found anything new in this portion of his work, we at least have not observed anything manifestly incorrect, except that we should be very sorry to adopt Dr. Morris's recommendation to give "two to three drachms of laudanum as an enema, repeated when necessary." p. 74.

The following description of an autopsy (page 13) is so fine that we must quote it for the edification of our readers: "Soon after death the heart was examined, also the brain: nothing abnormal was found, &c. Thus it would seem that *shock* and putrid infection, meet hounds of death, hunted this unfortunate man, as it were, in couples; *shock* held him down, while pyæmia fastened in her poisoned fangs; and so while

"Presently through all his veins ran
A cold and drowsy humour, which did seize
Each vital spirit,

shock, like a dog, still held on, till the great killer cried 'Dead!'

As further examples of the beauty and lucidity of Dr. Morris's style, we may quote from page 42: "Before his removal from the table to the bed, he turned faint and deadly pale; the extremities cold; he vomited freely, *which smelt very strongly of brandy*," &c.

And again from page 48: "Bringing actions against railway directors for the slightest personal injury sustained in a railway accident has become of late very prevalent; and this is owing, unquestionably, to the prominent manner in which injuries of the nervous system, caused by railway accidents, have been thrust before the public under the startling announcements of 'Railway Accidents or Collisions; their Effects upon the Nervous System,' 'On Railway Injuries.' *These writers have evidently given an unfair bias*," &c.

On page 43, the author tells us that in a certain case he "gave a very unfavourable *diagnosis*."

Seriously, had we not read this book ourselves, we could not have believed that such a production could have originated from a Fellow of the Royal College of Surgeons, by Examination. We should like to know Sir Dominick Corrigan's opinion of the way in which titles are given by the licensing bodies of England.

This book is beautifully printed upon tinted paper of a very good quality. We can only regret, on account of our excellent friends the Messrs. Lippincott, that the gem which they have brought before the American public is not more worthy of the very elegant setting in which they have encased it.

J. A., JR.

¹ The title of a pamphlet by William Camps, M. D. 8vo. pp. 20. London: H. K. Lewis.

ART. XXV.—*A Manual of Inorganic Chemistry, arranged to Facilitate the Experimental Demonstration of the Facts and Principles of the Science.* By CHARLES W. ELLIOT, and FRANK H. STORER, Professors of Chemistry in the Massachusetts Institute of Technology. Second edition. pp. 605, Appendix, &c., lix. New York: Ivison, Phinney, Blakeman & Co., 1868.

This manual claims only to embody in a new form the existing knowledge of the facts and principles of chemical science without adding anything novel to either. The method of presenting the subjects to the learner's mind is by a combination of analytical and synthetical processes proceeding step by step, from the familiar to least known facts, introducing in their appropriate places the technical terms and principles of the science, or those deductions which chemists have drawn from the facts as they have been developed.

The consideration of the air and its largest constituent, nitrogen, first claims attention, then succeeds water, its separation into its constituents hydrogen and oxygen and the properties of these gases, under which heads are explained the nature of atoms and molecules, of oxidation, and combustion, the processes of diffusion of gases, solution and distillation. Having thus shown the material facts in relation to these elements, their compounds of an inorganic character are brought under view, the combinations of nitrogen with oxygen and with hydrogen affording ample means of explaining clearly the ratios in which they unite, the modes adopted to denote these relations by means of empirical and rational formulæ, carefully insisting that the former expresses facts, the latter opinions which can be adopted only when consonant with *all* the reactions and relations which have been observed, while at the same time they facilitate the acquisition of the science by presenting in a brief, clear, and precise form, both the known and the probable nature of the changes which take place in simple as well as complicated reactions.

Proceeding on the same plan, muriatic acid is considered before noticing its constituents, and its properties, compositions, and analysis discussed. Chlorine being now set free, its properties and union with the previously described elements become proper subjects for investigation, with the analogous bodies bromine, iodine, and fluorine. Ozone and antozone are noticed in much detail on account of the subject being one of primary importance in the present, and of probable increased value both practical and theoretical for the future.

Thereafter the elements are grouped according to their natural relations, by which much repetition is avoided and the student familiarized with the close similarity in nature and reactions which is found to exist among many bodies. Sulphur a familiar substance becomes the type of a group including selenium and tellurium, with perhaps oxygen—capable of assuming two distinct crystalline forms, opens the way to the discussion of the systems of crystallography and processes by which crystals may be produced, and its range of combination to that of the nomenclature adopted for the different compounds which it and the other elements form with each other and with metals. Combination by volume and condensation ratios occupy a distinct chapter under this head.

The nitrogen group, containing phosphorus, arsenic, antimony, and bismuth, next attract attention; isomerism and allotropism are clearly defined, and liquid diffusion as differently exhibited by colloids and crystalloids, proven experimentally by means of the dialyzer, with the cautions necessary to insure success. If there be any defect in the system of teaching here adopted, it presents itself under the head of the detection of arsenious acid, where the ammonio-salts of copper and silver could not be noticed without introducing subjects not yet considered, neither do they subsequently appear under their special heads in this relation.

The carbon group in its type, as the element par excellence of organic compounds, opens the way to prominent subjects of chemical philosophy as developed by the compounds of carbon with hydrogen. These, so numerous as when united with oxygen and other elements to count by thousands, have by their complexity given rise to many theories as to their internal organization, which, however much they may differ from each other, all tend to show the great

advantage which is to be obtained in the study of complicated compounds by the power of arranging them in groups or series according to their analogy in nature or composition. Carbon, hydrogen, and oxygen being the elements which are principally engaged in the phenomena of combustion, the acquaintance with their properties and that of the compounds formed by their union renders possible the clear consideration of the effects produced by their union as exhibited in the evolution of light and heat. The nature of ignition and flame, lamps, blow-pipes, &c., the indestructible character of matter and economy of fuel are commented on and explained.

The metals, although more numerous, do not occupy in their consideration the same amount of space. The alkali group, which is made to include thallium and silver, introduces spectrum analysis, glass, gunpowder, photography, &c., concluding with atomicity or the *atom-fixing* power of chemical elements, as exhibited by the power of holding in chemical combination one, two, three, or four atoms of hydrogen. The calcium group follows with remarks on the hardness of waters, and their liability to be contaminated by lead, the last metal in the group. The magnesium group, under zinc, give rise to remarks on the galvanic current and the correlation of forces, and the aluminium group to further remarks on nomenclature.

The remaining metals are associated on the same plan, occupying three chapters, a fourth being devoted to the consideration of atomic weights, and symbols, classification, atomic heat, &c. The appendix takes up the subject of chemical manipulation, weights, and measures, &c.

Written in a clear and comprehensive style, and accompanied by well chosen experiments lucidly described, this work is well calculated for the instruction of the beginner, by alluring onward and gradually bringing to his notice the intricacies of the science instead of repelling by unaccustomed words and ideas which the new student finds hard to seize and appropriate.

In typography and execution the book is worthy of commendation and the size convenient for constant use.

R. B.

ART. XXVI.—*Diseases of the Heart: their Diagnosis and Treatment.* By DAVID WOOSTER, M. D. 12mo. pp. 209. San Francisco: H. C. Bancroft & Co., 1867.

THE author of this little work tells us in his preface that it is not "a strictly systematic treatise," and deprecates a too rigid scrutiny by saying that it "has been prepared during the intervals of daily toil." His object has been to present to the profession a book in which the rules for the diagnosis and treatment of diseases of the heart and aorta shall be clearly laid down. For the most part, we think, Dr. Wooster has attained his object; certainly so far as the limits of his book will admit of, the seat and character of the different murmurs originating in the heart or in the aorta are correctly given. We think, however, that the assertion which he makes, that "there is no known pathognomonic sign or signs of aortic constriction," is one which few practical auscultators will be disposed to admit; it is true that aortic, like mitral constriction, may exist without a murmur, and that a systolic murmur, heard best at the base of the heart, is often independent of organic disease of this orifice: yet we believe that care will generally enable us to recognize an aortic constrictive murmur when it does exist, as no other murmur is so well propagated in the course of the aorta and large arteries.

The best authorities on the diseases of the heart have evidently been freely consulted by our author, and in his preface he candidly acknowledges his indebtedness to them. In one instance, however, he has misquoted Walshe; he says: "yet neither Walshe nor Hope ever observed the thrill (purring tremour) in any valvular disease." Walshe states distinctly that this thrill may be due either to mitral regurgitant or to aortic constrictive disease (Amer. ed., p. 43,

1862). And in the Appendix he admits having recently observed it accompanying aortic regurgitation.

The word embolism is used, we think incorrectly, to mean the coagulation of the blood in the cavities of the heart. It is generally applied to the impaction in an artery, of a clot or vegetation which cuts off the blood from the part supplied by this artery. The obstructing body may come from the heart or, it may be, from some one of the veins.

A little more care bestowed upon the reading of the proof sheets would have repaid the author; thus, case 5 is made to follow immediately case 3; at page 130 we are told that pericarditis is a much more fatal disease than endocarditis, while the reverse is stated at page 196; coronary is spelled coronary; auscultatory, auscultory; albuminuria, albumenuria; Bouillaud, Boillaud, &c. These are all errors which no amount of "daily toil" entirely excuses.

To those who have neither time nor inclination to read the systematic treatises on diseases of the heart, this little work will give a very fair idea of the present state of our knowledge of the subject.

J. H. H.

ART. XXVII.—*Clinical Observations on Diseases of the Heart and Thoracic Aorta.* By PEYTON BLAKISTON, M. D., F. R. S., Fellow of the Royal College of Physicians, &c. 12mo. pp. 309. London: Longman, Green, Longman, Roberts & Green, 1865.

DR. BLAKISTON, in the book before us, embodies the results of an experience in public and private practice, extending over a period of thirty years. During this time he has seen the science of pathology make rapid strides, and this change has been accompanied by a corresponding improvement in the means at our command for the diagnosis and treatment of disease. The changes which have occurred in the last thirty years are ably discussed in the opening chapter. Our author has, however, fallen into an error in ascribing to Dr. Jackson, of Philadelphia, merit which belongs to the late Dr. James Jackson, Jr., of Boston—that is, the discovery of the importance of the prolongation of the expiratory murmur as a sign of incipient phthisis.

The book is divided into three parts. In the first is considered the pathology of the diseases of the heart and of the thoracic aorta; in the second, their diagnosis; in the third, their treatment—the whole being interspersed with reports of cases which illustrate some points in the text. In fact, these reports of cases are so freely distributed through his pages that the text seems rather subservient to them. Some of the cases which have come under his observation are certainly unusual; they are all well reported, and add considerable value to his book.

Dr. Blakiston attributes much importance to the existence of tricuspid regurgitation as a cause of cardiac dropsy, and has been able to verify his assertion as to its frequency by reference to the post-mortem appearances in almost all cases in which dropsy had been a prominent symptom during life. In these cases, the tricuspid valve was found incompetent, either in consequence of inflammatory action or as a result of the general dilatation of the right ventricle. Great care, he says, will frequently enable the observer to detect incompetence of this valve, which might easily escape a hurried examination. Regurgitation at the tricuspid orifice does not give rise, in every case, to a murmur or to venous pulsation; hence the frequency with which its existence may be unsuspected during life. In every case, however, in which tricuspid regurgitation is known to exist, he thinks our prognosis should be exceedingly grave, as it must, sooner or later, produce congestion of the cerebral and other portions of the systemic circulation.

Where there is so much to commend it is not pleasant to point out even a trifling inaccuracy. We think, however, that the name of so distinguished a pathologist as Cruveilhier should be spelled correctly, not Cruvellier, as in the book.

J. H. H.

ART. XXVIII.—*Etudes sur les Médications Arsenicale et Antimoniale et sur les Maladies du Cœur.* Par le Docteur LUCIEN PAPILLAUD (Henri Almès). 8vo. pp. 79. Paris: J. B. Ballière et Fils, 1867.

M. PAPILLAUD, having found that the treatment of diseases of the heart by the ordinary remedies was often followed by an unsatisfactory and negative result, has of late years had recourse to a combination of arsenic and antimony, and the object of the *brochure* before us is the establishment of the claims of these medicines as active agents in the management of such diseases. We need only refer to the influence which arsenic exerts upon the course of cutaneous eruptions, of malarial fevers, and of various nervous affections, to convince ourselves that it is capable of producing a powerful effect in certain conditions of the system; and it is therefore not surprising that our author has found his patients improve while taking it. Antimony is not generally considered to be a tonic, which M. Papillaud thinks it is, but its usefulness in all doses as an alterative would be denied by few, and there is every reason to believe that in hypertrophy of the heart it may occasionally act as a sedative. Our author makes, however, too great a demand upon our credulity when he asserts that under the use of these two medicines hypertrophy and cardiac obstruction have disappeared. Had he said the symptoms of these conditions were no longer present, we should not have been disposed to think that he had done that which he says we are liable to do—misinterpret facts.

M. Papillaud, in the course of his experiments with these two medicines, has found that they are most conveniently administered in combination under the form of the arsenate of antimony, and this salt, he says, may be given in doses of four millegrammes daily, which will be sufficient to produce a marked improvement in the course of a few days. In one case a centigramme was administered daily without giving rise to any unpleasant results. Although patients have frequently taken this medicine almost daily for five years, there has never been any cumulative effect produced, but uniformly a decrease in the frequency of the pulse, an increase of the appetite, and a gain in weight.

M. Papillaud has evidently had a theory to prove, and consequently the results of his treatment have appeared to him favourable. The remedy, however, might be tried in cases in which the classical treatment had failed, and in those cases in which functional disease predominated over organic. J. H. H.

ART. XXIX.—*On the Signs and Diseases of Pregnancy.* By THOMAS HAWKES TANNER, M.D., F.L.S., etc. From the Second and Enlarged London Edition. With four coloured plates, and illustrations on wood. 8vo. pp. 490. Philadelphia: H. C. Lea, 1868.

THE first edition of Dr. Tanner's work on the Signs and Diseases of Pregnancy, which appeared in 1860, was very favourably received as presenting a fair compendium of the actual state of professional knowledge in respect to the several subjects of which it treats; and as a treatise well adapted to communicate to all who should consult it, correct and definite views as to the proper signs of pregnancy and their relative value, and the symptoms and diagnosis of the leading diseases and accidents to which the female is liable during gestation. In the edition before us, every chapter of the work has been improved by the addition of whatever reliable observations have been recorded during the seven years which have elapsed since its first appearance, and of the results of the ample clinical experience of the author during the same period.

The very thorough revision the work has undergone has added greatly to its practical value, and increased materially its efficiency as a guide to the student and to the young practitioner.

In this second edition the original plan of the treatise has been adhered to, namely, that of enforcing the general facts inculcated as to the pathology and therapeutics of the several affections incident to pregnancy by the detail of illustrative cases. A species of teaching approaching, in some respects to that given at the bedside of the sick, and well adapted, in the absence of the latter, to aid the student in impressing on his mind a correct and vivid idea of the phenomena and course of disease from its onset until its termination, and a rational conception of each step of the remedial treatment instituted.

D. F. C.

ART. XXX.—*Pathological Anatomy of the Female Sexual Organs.* By JULIUS M. KLOB, M.D., Professor at the University of Vienna. Translated from the German by JOSEPH KAMMERER, M.D., Physician to the German Hospital and Dispensary, New York, and BENJAMIN F. DAWSON, M.D., Assistant to the Chair of Obstetrics, College of Physicians and Surgeons, New York. 8vo. pp. 299. New York: Moorhead, Simpson & Bond, 1868.

This work by Dr. Klob, of Vienna, presents, without question, a very complete and reliable exposition of the pathological anatomy of the uterine organs and their annexes, in reference to each of the abnormal conditions to which these parts are liable, in accordance with the revelations of the latest observations. It brings into one view a mass of facts recorded by different observers in general treatises on pathological anatomy, in monographs on individual diseases of the female sex, and in papers published in the medical periodicals of different countries. As might be expected, it presents a very full exposition of the latest views of the most authoritative of the physicians of the German school. The profession in this country may therefore be congratulated that this admirable treatise, by the satisfactory translation before us, has been placed within its reach. Every portion of the work is deserving of a careful study; we would more especially call attention, however, to the section which treats of "*adventitious growths*" of the uterus, especially polypi, tumours, etc. The chapters on dropsy of the uterus, uterine tympanitis, and accumulation of blood in the non-gravid uterus, will be read with interest and profit.

As is well remarked by the translators of Professor Klob's treatise, to derive all the instruction it is calculated to impart upon the important subjects of which it treats, it must be carefully studied; it is a work illy adapted for casual perusal or occasional reference. Though especially concise for a German scientific work, it can never be considered superficial or unsatisfactory. What is known upon the subject of its specialty is all told, and, in many instances, compared with the views of the author, based upon his own personal observations.

D. F. C.

ART. XXXI.—*The Diagnosis, Pathology, and Treatment of Diseases of Women, including the Diagnosis of Pregnancy.* By GRAILY HEWITT, M.D., etc. First American, from the second London edition, revised and enlarged. With one hundred and sixteen illustrations. 8vo. pp. 707. Philadelphia: Lindsay & Blakiston, 1868.

This second edition of the excellent work of Dr. Hewitt, presents in a form well adapted to conduct the student to a knowledge of the diseases of women, and to assist the young practitioner in his study of these diseases at the bedside of the patient—a very full and clear exposition of the views entertained by the most authoritative teachers as to their pathology and treatment, and their correct diagnosis. This commendation applies especially to the present

edition of the treatise. Although in its first edition the work was a particularly excellent exponent of the subjects embraced in it; yet, in the edition before us, the author, besides bringing his teachings down to a later date, so as to include the more recent observations in reference to the questions discussed, has presented a fuller and more systematically arranged account of the pathology of the diseases of the female in connection with their treatment. The statement on the title-page of the edition before us, that it has been revised and enlarged, will be found to be fully borne out upon a careful examination of its several sections.

D. F. C.

ART. XXXII.—*A Practical Treatise on the Diseases of Children.* By D. FRANCIS CONDIE, M. D., F. C. P. Phila., &c. &c. Sixth edition, revised and enlarged. 8vo. pp. 783. Philadelphia: Henry C. Lea, 1868.

A WORK which has passed through five *bona fide* editions, and of which a sixth has been called for, may be regarded as being beyond the bounds of criticism; that high tribunal, the profession, having already recorded a verdict in its favour. All that is needed, in a notice of the present edition of Dr. Condie's well-known treatise, is to state that it has undergone a careful and thorough revision, and the advances recently made in our knowledge of the various diseases of childhood have been carefully incorporated in the several chapters. This will be manifest on a comparison of the present with the previous edition.

ART. XXXIII.—*Atlas of Venereal Diseases.* By A. CULLERIER, Surgeon to the Hôpital du Midi, Member of the Surgical Society of Paris, Chevalier of the Légion d'Honneur, etc. Translated from the French, with Notes and Additions, by FREEMAN J. BUMSTEAD, M. D., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York, etc., with about one hundred and fifty beautifully coloured figures on twenty-six plates. To be complete in five parts. Part I. 4to. pp. 140. Philadelphia: Henry C. Lea, 1868.

THIS is a very handsome edition in English of a well-known and highly valued French publication. That Dr. Bumstead, the author of by far the best and most popular treatise on venereal diseases in the English language, should think it proper to translate and edit this one, speaks more highly in its favour than anything that can be said. It is a judgment *ex cathedra*. The translation is an excellent one. The only point which tempts our criticism is where the translator in the chapter on *blennorrhagia* writes: "In common parlance it is called a *discharge*, and *chaude-pisse*." The common English name, the one answering to the French *chaude-pisse*, is *clap*.

This first part contains the introduction and the greater part of the original work which treats of blennorrhagia. The accompanying plates in the first part represent blennorrhagia and its complications, swelled testicle and gonorrhœal ophthalmia. They are admirably and artistically executed. Indeed they are superior to any illustrations of the kind hitherto executed in this country. The notes added by Dr. Bumstead enhance the value of the work. The most interesting, and, we think, also, the most important are those wherein he contends against Cullerier for two kinds of syphilitic virus.

The whole getting-up of this publication is of rare excellence, and most creditable to all concerned. We shall notice it more in detail when we receive the completion of the work.

W. F. A.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Nervi Nervorum*.—M. SAPPÉY has recently communicated, through Prof. Robin, to the Academy of Sciences, his discovery of nervous filaments in the neurilemma.

"The neurilemma," he says, "receives nervous filaments which are in the same relation towards the nerves as the *vasa vasorum* are towards the vessels; I therefore propose that they should be designated by the name of *nervi nervorum*. Their existence in the fibrous sheath of nerves had not yet been signalized; yet it is undeniable, and may be easily demonstrated.

"The disposition which the *nervi nervorum* affect in the neurilemma differs in but a slight degree from the one presented by the nervous ramifications in the other dependencies of the fibrous system. Like these, they generally attend the arteries; in like manner they exchange, during their course, numerous divisions, by which anastomoses are effected, so that on different points of their situation a small plexus may be observed, showing irregular and unequal meshes.

"It is not only on the principal or common sheath that they are met with, but likewise on those which involve the principal fasciculi and the tertiary fasciculi. I have been able to trace them even on the sheath of secondary fasciculi. But in proportion as the size of the sheath diminishes, they become far more minute, and are much less frequently met with. They are never seen to extend to the involving membrane of primitive fasciculi.

"The absence of the *nervi nervorum* on the sheath of primitive fasciculi explains why they are not met with on all nervous divisions the diameter of which does not exceed one millimeter.

"The lining or deep-seated membrane of the optic nerve, which fulfils the office of a neurilemma, does not receive any nervous filament. The exterior membrane, on the contrary, receives a great number of filaments, which take their origin in the ciliary nerves.

"The outward sheath of the optic nerves, so rich in *nervi nervorum*, is remarkable also for the abundance of elastic fibres which enter into its composition. The ancients were therefore thoroughly mistaken in considering it as a sort of link between the dura mater and the sclerotica, or, in other words, as prolonging the one and being prolonged by the other. It differs widely from the two structures—first by its elastic fibres, which are wanting in both; and, secondly, by its *nervi nervorum*, which are extremely rare in the dura mater of the brain, and of which there exists no vestige in the sclerotic. Consequently, anatomical analysis, far from confirming the analogy which had been pointed out by so great a number of anatomists, attests, on the contrary, that it differs by its own proper characteristics from the other two membranes, with which it is continuous."—*Gazette Hebdom. de Méd. et de Chirurg.*

2. *Recurrent Sensibility in a Divided Nerve.*—M. BOECKEL has related to the Medical Society of Strasbourg a new case of *complete* section of the nerve, which is reported in brief by M. Reveillout. Immediately after the accident, it was ascertained that the fingers had not lost all sensibility, and the central end of the median nerve was sensitive. The superficial and deep flexor tendons were completely divided, as well as the nerve. The fingers and wrist were flexed during three weeks. The nerve was not sutured. At the end of two months, the movements were restored, and sensibility was normal over the whole palmar face of the hand and fingers, except the index, where it was blunted. According to M. Boeckel, the regeneration of the median nerve is the more rapid for the absence of any suture.—*Brit. Med. Journ.*, Jan. 25, 1868.

3. *Peripheral Termination of the Motor Nerves.*—Prof. TRINCHESE, of the Genoa University, has drawn the following conclusions :—

"1. In all the animals in which he has been able to investigate the subject, a special organ, the *motor plate*, at the end of the *cylinder axis*, has been found.

"2. The following is the manner in which the nervous element is united with the muscular fasciculus :—

"When the muscular fasciculus is provided with sarcolemma and the nervous element with a sheath, this blends with the envelope of the primitive muscular fasciculus at the point at which the nervous element meets with the muscular fasciculus. At the same point, or a little before, the medullary substance stops, whilst the *cylinder axis* goes on and enters the motor plate.

"3. The motor plate is placed beneath the sarcolemma. It appears generally as a cone, of which the summit is directed to the side of the nerve-tube, whilst the base rests on the primitive muscular fibres.

"4. This plate is formed of two superposed and quite distinct layers, especially in those animals which have large plates—the torpedo, for instance. The upper layer is of a granular substance; the lower is perfectly homogeneous, and is probably only an expansion of the cylinder axis.

"5. In the substance of the granular layer of the plate is found, in the torpedo, a system of canals, in which the cylinder axis ramifies as a large-meshed network. These canals are bounded by a sheath which forms their walls.

"6. When the muscular fasciculi have a central canal the granular substance of the plate is prolonged into the granular substance contained in this canal.

"7. In animals provided only with smooth muscular fibres the cylinder axis traverses the granular substance of the plate dividing into two filaments which have pointed ends at the two extremities of the contractile element.

"8. Altogether it appears that each primitive muscular fasciculus shows one motor plate only. In this one or many nervous elements, proceeding from the subdivision of the same nervous tube, may end.

"9. The diameter of the motor plate increases in proportion with the size of the primitive muscular fasciculus."—*Journ. de l'Anatomie et de la Phys.*, Sept. and Oct. 1867.

4. *Origin and Nature of Movement.*—M. MAREY, in a recent work (*De Mouvement dans les Fonctions de la Vie*), says that physiologists and histologists have been baffled in their attempts to trace the "*origin*" of "*movement*," or of "*contractility*" to one single constant anatomical element in the tissues by which this function is manifested. Microscopic observation shows the existence of the power of contraction in tissues which are perfectly *amorphous*, as well as in those that are highly organized. Many of the lower animals—the Medusæ, for example—are eminently contractile, but no special tissue, such as is the seat of contractile power in the higher animals, can be found in them. The Amœbæ also seem composed of a contractile material, in virtue of which they are capable of assuming the most irregular and varied forms, yet the highest powers of the microscope can discover no trace of organized tissue in them. The vibratile cilia of certain epithelial cells, though they present a more advanced organization, show nothing in their transparent tissue which will explain the production of the movements which animate them. Equally difficult is it to explain the movements of the spermatozoa.

But this contractile material, notwithstanding its different forms, is similarly affected by physical and chemical agents. Thus heat stimulates its contractility, cold diminishes it. The action of alkalies favours it, that of acids destroys it. It has therefore been supposed that the endowment of contractility resides in a substance chemically the same in all cases, but appearing under different aspects. In opposition to this supposition is the fact that the chemical composition of one muscle will vary with that of another, within certain limits—inosite, for example, is found in the muscles of the heart, while it is wanting in most other muscles. M. Marey is therefore obliged to leave the discussion of the "origin of movement" very much as he found it—unexplained, perhaps inexplicable.—*Med. Times and Gaz.*, Feb. 15, 1868.

5. *Influence of Electricity on Muscular Fibre of Vegetable Life and on Nutrition.*—M. OXIMUS has observed the following facts in relation to this subject. 1. *Action on the great sympathetic.* The intermittent current produces a lowering of the temperature; the continued current, on the contrary, raises it. With the intermittent current there is a tetanic spasmodic contraction of all the muscular fibres of the small bloodvessels, preventing the flow of blood. There are no corresponding effects with the continued current. 2. *Action on the intestine.* The action of the intermittent current is local; the electrified part of the intestine becomes violently contracted. The continued current produces no effect. 3. *Action on the heart.* When applied directly to the heart of cold-blooded animals, the intermittent current produces two or three contractions; the movements of the heart cease, and the auricle remains forcibly contracted. The continued current does not arrest the pulsations of the heart, the movements, on the contrary, are more frequent.—*Brit. Med. Journ.*, Jan. 25, 1868, from *Archives Gén. de Méd.*

6. *Spermatic Fluid of the Aged.*—The investigations of M. DIEN, of the Invalides, gives the results of 105 autopsies of men between the ages of 64 and 97. There were no spermatozoa in 64 of the 105; that is to say, in 61 per cent. no spermatozoa were found. (Other like observations to those of the author would diminish this percentage, but they are based on observations in cases of an average less-advanced age.) Four of the author's observations were of nonagenarians; of these, none had spermatozoa. Of the 64 who had no spermatozoa, 26 died of old age. The spermatozoa, when present, are more or less abundant. In 14 cases in which the spermatozoa were not abundant, some were perfect in form, but most of them had truncated tails, whilst others, the last vestige of them, only showed the heads. If spermatozoa were absent, or almost wanting, there were other interesting peculiarities in the seminal fluid—numerous granular cells and great fatty cells, yellow coloured, like colostrum globules, and strongly refracting light. Ether being added, they disappeared. Especially when the fluid was of a dark brown-colour, there were many blood-globules, some normal, and others undergoing destruction—an evident pathognomonic sign of little hemorrhages in the *vesiculæ seminales*. There were also often rather large masses, more or less yellow, of variable shape, resisting acetic and sulphuric acids, ether and caustic potash. These were evidently masses of colouring matter, the result of hemorrhages in the *vesiculæ* of a more or less recent date.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1868, from *Journ. de l'Anatomie et de la Phys.*, Sept. and Oct. 1867.

7. *On the Growth of Cells in the Blood of Animals killed by Snake Poison.*—Prof. HALFORD, of Melbourne, has continued his experiments on this subject. The following was the result of numerous experiments on dogs and cats. Blood soon drawn from an animal bitten by a snake contains a larger amount of nebulous or finely granular matter than is usually seen. After the lapse of one hour this nebulous matter is much increased in quantity, lying in the intervals of the red corpuscles, and presently it breaks up into small masses, out of which the cell is gradually evolved. In two hours after the bite the cells may be seen in great numbers, but very indistinct. From this time even further

microscopic observation shows them in great abundance; and from the sixth to the twelfth hour they may be seen in perfection, macula and nucleus included. Whilst this is taking place the nebulous matter disappears. The nebulous matter must therefore be regarded as the germinal matter out of which the cells are formed. At this time the cell-wall is extremely delicate, the macula very plain as a bright particle, and the nucleus either single, reniform, double, triple, or multiple. It would appear that the cells are now increasing in number by division of their nuclei, and the minute particles, having the vibratory movement of molecules in fluid, may be seen between the nucleus and cell-wall. On one occasion he watched for upwards of half an hour a constant revolution within the cell of a particle corresponding in all particulars to a macula. This particle passed regularly round the nucleus at an uniform rate, revolving both in the direction of and against the current of the fluid in which the cell was floating, reminding one of the movements seen in *Valisneria*, etc. Twenty-four hours after the bite, the cells attain their greatest size, and, supposing the animal then dead, have probably ceased multiplying, and are simply living, or perhaps growing, the nucleus being usually single, the macula extremely distinct, and the cell very large. It is not uncommon at this time and later to see a cup-shaped hiatus in the cell-wall from which the macula has escaped. The cells may be seen in the blood for many days, their presence seeming to be preservative against putrefaction. Where they have most room, as in the *venæ cavæ*, cranial sinuses, and cavities of the heart, they attain the greatest size and most circular form. In every instance the cell-wall is very elastic, and accommodates itself to surrounding pressure.

To ascertain how soon after inoculation these cells appear, is a matter of some difficulty. It is not necessary to suppose that at first they are very numerous; and, in order to detect them so early, it might require fifty or a hundred microscopes and observers at work at the same instant. Still, from their having been seen two hours after the bite, and from all we know of the rapidity with which new formations occur, both in health and disease, it is doubtless extremely soon. Of one thing we are sure; viz., that the nebulous germinal matter from which they spring is within a few minutes diffused all over the body; for, supposing an animal to die in five minutes, and hence all circulation stopped, the cells are as readily seen in its blood a few hours after death as if it had lived as many hours as we say minutes. The macula is, doubtless, a particle of germinal matter; but, whether it is to be regarded as that from which the whole cell has sprung, or whether it has been detached from the nucleus and is destined for independent existence, it is difficult to say. The fact that it is almost invariably large when the cell is small, and small when the cell is large, favours the first view. Perhaps the most important point must be left still undecided. Has the blood built up these cells, directly or indirectly, from the germinal matter of the serpent? The answer to this question the Professor would endeavour to give at a future meeting; but in either case the result was the same: Storing up of force in the new growth, at the expense of the nutritive properties of the blood, and by perversion of those chemical changes necessary to the maintenance of the life of the infected animal.

That the germinal matter exists in a state of extreme minuteness, the following experiment shows. A cat, being with young, was inoculated with the poison, and, dying in three hours, her four kittens were removed from the womb. They were dead, and the blood of all contained the foreign cells, as did that of the mother. To pass from the cat to the kittens, the germinal matter must have penetrated the delicate membrane covering the tufts of the fetal vessels. If the poison of serpents can thus readily be traced through the body, and from parent to offspring, why should not the path of all infections be tracked? Some months ago, it was stated that it was conjectured that a child had been bitten by a snake. No doubt need ever exist for the future; a drop of blood will always furnish the necessary evidence.—*Brit. Med. Journ.*, Dec. 21, 1867.

MATERIA MEDICA, GENERAL THERAPEUTICS AND
PHARMACY.

8. *Physiological and Therapeutical Action of Caffein.*—The number of the *Archives de Physiologie Normale et Pathologique* for Jan.—Feb. 1868 contains an interesting paper on this subject, by Dr. M. LEVEN. The following are the conclusions he draws from his experiments:—

Caffein appears to directly stimulate the heart. When first absorbed, the circulation and respiration are accelerated, the pulse is more frequent and firmer, and the secretions more active.

The central nervous system, the brain and spinal cord, and the nerves are stimulated.

The muscular system of the life of relation and that of organic life contract violently.

The muscles of the former system are affected with trembling or with general contraction. The fibres of the stomach, of the intestines, and of the bladder also contract.

At a later period after absorption of caffein, the action of the heart is lessened; the frequency and firmness of the pulse diminished; the muscular system becomes exhausted, but is not paralyzed. The nervous system also suffers exhaustion.

Caffein does not entirely extinguish reflex action, nor the functions of nerves and muscles.

It acts as a poison on different animals in different doses; it may be given to man in the dose of many grammes without injury.

It is readily eliminated from the system, and remains in it only a few hours.

He further states that caffein, like alcohol, diminishes the secretion of urea, but increases the quantity of urine excreted. It diminishes the waste of the organs, and economizes the tissues.

With two litres of coffee daily, the Belgian miners undergo, without substantial food, excessive muscular exertion. The caravans which traverse the desert are supported by coffee during long journeys and lengthened privation of food. It is known that some old persons are almost exclusively nourished by coffee.

9. *Influence exerted by Anæsthetics on the Brain and Nervous System.*—This was the subject of a recent lecture by Dr. B. W. RICHARDSON. The obvious fact that the motion of the heart and the movements of respiration continue in action while the rest of the body is under the narcotic effect, during anæsthesia, proves that the whole nervous system is not involved, and that the involuntary and semi-voluntary muscular mechanism is also not involved except when extreme and fatal symptoms are developed. What parts, then, are influenced by an anæsthetic? The idea was almost intuitive that the brain is the organ affected, and that the centres of consciousness are those chiefly held in abeyance. But, to prove this as true, experiment was necessary. In proof, the lecturer took a large pigeon, narcotized it deeply with chloroform, and in this state passed through its body, from the head to the foot, a rapid intermittent induction current. The bird instantly rose from the table, extended its wings, opened its eyes, and seemed as if restored; the current was then stopped, and the bird was shown to be as deeply asleep and as powerless as before. Another bird was put to sleep by freezing the brain, and when utterly insensible was subjected to the electrical shock in the same way, when it flew from the table into the room, where, breaking its connection with the battery, it dropped on the floor comatose, motionless, and as anæsthetized as before, in which condition it remained for many minutes. The lecturer in these experiments demonstrated that the anæsthetic action was localized in the cerebrum. His battery was like an outer brain, which supplied power without intelligence, and which, by the effects of its current, showed that all the muscular elements were ready for work, and only awaited the order from the brain. The lecturer next discussed the question—What, during the process of anæsthesia, leads to this change in the brain? Is there a chemical action on albumen? Is there pres-

sure on brain matter? Is there deficient oxidation of the blood? Is there contraction of bloodvessels, and diminished supply of blood from that cause? All these hypotheses were experimentally tested and negatived. It was admitted that during extreme anæsthesia there is reduced oxidation and a singular reduction of temperature. These changes are inevitable, because the anæsthetic vapours replace oxygen during their diffusion into blood; but the diminished oxidation is not the cause of the insensibility. In proof of this Dr. Richardson showed an animal breathing an air in which the oxygen was reduced by addition of nitrogen from 21 parts to 9 parts in the 100, side by side with another similar animal breathing an air in which the oxygen was reduced by the addition of vapour of bichloride of methylene only to about 20 parts in the 100—viz., 4 cubic inches in 500. The result was that the animal in the extremely reduced atmosphere was quite unaffected whilst the animal in the slightly reduced atmosphere was in the deepest narcotism. Then a correcting experimental test was adopted, and the bichloride was administered in an atmosphere containing an excess of oxygen, the oxygen being present in double its ordinary or natural proportion; the excess of oxygen exerted no perceptible obstacle to the anæsthesia. To determine whether there was contraction of bloodvessels under anæsthetics, the lecturer had had recourse to transparent small trout; through their bodies, with the microscope and the one-inch lens, the bloodvessels could be seen, and the corpuscles flowing through them. These animals can be narcotized readily by making them breathe water saturated with chloride of methylene or ether. In the narcotized condition, the vessels do not contract, but under the influence of ether, in the later stages before death occurs, dilatation and regurgitation are observed. The latter is noticed also when chloride of methylene is used. With both reagents breathing and vessel circulation cease before the heart's action. The lecturer concluded that anæsthetic vapours act directly upon nerve matter either by preventing the development of force or by stopping conduction. The latter hypothesis is supported by the fact, proved by experiment, that these vapours obstruct the conduction of heat and electricity.—*Med. Times and Gaz.*, Feb. 15, 1868.

10. *Eucalyptus globulus* as a *Febrifuge*. By Dr. ULLERSPERGER.—The eucalyptus globulus is a tree of considerable size growing in New Holland, belonging to the order of myrtaceæ, and having a hard wood which is used in ship-building. It is stated that, in Barcelona and the neighbourhood, an infusion of the leaves, used like tea, has been given with the greatest success in fevers. Several intermittents were also cured, among which was a double tertian, and another case in which quinia had been given without effect. The favourable results were manifested after the first dose; and while quinia, given in the increase of the fever, only aggravated the symptoms, the eucalyptus on the other hand, taken under the same circumstances, did not aggravate, but diminished its violence. According to Salarich, who describes the tree in the "*Espanna Medica*," the eucalyptus grows in temperate as well as in hot climates, but not in cold ones. Besides its use in intermittent fevers, Salarich recommends it as the best anodyne in nervous headache and in other pains of the head, which are not exactly of a periodical type.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1868, from *Schmidt's Jahrbücher*, Dec. 10, 1866.

11. *Application of Iodoform to the Treatment of Cancer of the Uterus and Diseases of the Bladder and the Prostate*.—After describing the properties and mode of preparation of iodoform, and referring to the therapeutical use of this substance in England, M. DEMARQUAY gives the results of his own experience of it as a local application. He has employed it in cancer of the uterus and in diseases of the bladder and prostate. He has applied it in the form of suppository with cacao butter, which is to be placed in the rectum in the case of diseases of the bladder or prostate, or in the vagina, in contact with the diseased mass, in the case of carcinoma or epithelioma of the uterus. A plug of cotton, placed at the entrance of the vagina, will prevent the substance from running out. When the cancer has formed a cavity, the remedy must be placed in the midst of it, in order that the diseased structure may be well exposed to

its action. Patients affected with inflammation of the prostate and the neck of the bladder reported themselves as somewhat improved by this plan of treatment, but M. Demarquay does not consider the results as altogether satisfactory. In cases, however, of ulcerated cancer of the neck of the womb, the improvement has been more decided. The application of iodoform has relieved pain, without disturbing the organic functions, and the improvement has continued as long as this agent was employed. The same improvement was observed in some cases of ulcerated cancer of the rectum, but M. Demarquay observes that, in certain instances of inflamed uterine cancer, the suppositories produced so much pain that they were necessarily discontinued. The iodoform is, therefore, not applicable in all cases, but in suitable conditions it is very useful, being very superior to opium as a local sedative, the iodine it contains producing its constitutional effects, while the organic functions, and especially the digestive, are undisturbed.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1868, from *Bull. Gén. de Thérap.*, May 15, 1867.

12. *Dr. Richardson's Styptic Colloid.*—Dr. JOHN LOWE, Surgeon to the West Norfolk and Lynn Hospital, has published (*Med. Times and Gaz.*, Jan. 25th, 1868) his clinical experiences with this application. He says: "The styptic has been largely used in our hospital in a variety of cases, and invariably with the best results. I have as yet never seen it fail to answer the ends for which it was designed. In old chronic ulcers, foul-smelling and filthy to a degree, the odour is at once destroyed, and healthy granulation established. Most markedly was this the result in a case of my colleague's. The patient, a young sailor, who had been long at sea, was admitted with a number of very large syphilitic ulcers on both legs, the stench from which made the ward unbearable. They were freely painted over with the 'colloid,' and in a very short space of time the odour was all but gone. They healed most rapidly.

"In cancer of the penis, too, it is most serviceable in removing the odour and in mitigating pain. Nothing could be more striking than its action in this respect in the case of cancer of the breast which I have reported above.

"In conclusion, I may state that erysipelas is, with us, to all appearance, a thing of the past. Some time ago, owing to imperfect sanitary arrangements, almost every surgical case in the hospital was attacked with erysipelas, and several died of pyæmia. Some improvement was effected in the hygienic condition of the hospital, but it is still imperfect. Latterly, however, since using the tincture of iodine to the surface of the wound and styptic colloid externally, there has not been a single case of either erysipelas or pyæmia, and the cases generally remain a very much shorter time on the books. There is no doubt that the colloid is an expensive application, and that it causes a serious expense to the hospital; but I consider that the gain from the rapid cure of the cases under treatment largely overbalances the original outlay; and not only is the expense diminished by the shorter duration of the cases, but, owing to the absence of septicæmia, there is a greatly reduced need of stimulants and extras."

13. *Use of Counter-Irritants.*—Prof. HEBRA, the celebrated dermatologist, declares his opposition to the use of counter-irritants (revulsives), which form so large a part of ordinary medical practice. He professes to show that the theory by which their use was originally suggested and is now maintained, is erroneous; and he brings forward clinical and experimental facts and arguments to demonstrate the evils which result from the practice. Physicians were, he maintains, led to adopt counter-irritants for the cure of internal diseases, by observing the alterations and apparent antagonism of cutaneous affections and internal lesions. When, for example, a patient, the subject of a skin disease (as psoriasis), was attacked by fever, the chronic cutaneous eruption was observed to fade and disappear while the febrile state lasted, but reappeared during convalescence. Again, in exanthematous fevers the febrile symptoms often subside on the appearance of the specific eruption; and, moreover, the eruption continues fully out only under a favourable condition of the internal affection; while, on the contrary, if the internal symptoms are aggravated, the cutaneous eruption diminishes, and, before a fatal issue, becomes altogether invisible.

Hence the popular idea among physicians and the laity, that the suppression or metastasis of the cutaneous affection is the cause of the fatal issue of the general disease. But these opinions are erroneous, for the chronic skin disease does not vanish first, to be replaced by the fever; but, on the contrary, the dermatosis only begins to fade after a prolonged continuance of an intense febrile state. In like manner, in every general disease of great intensity and prolonged duration, the anæmia which supervenes is first noticed on the skin, and hence the fading and disappearance of red eruptions in these cases, since even syncope will cause their temporary vanishing. Another erroneous opinion, prevalent from ancient times till the present day, which probably lent support to the use of counter-irritants, was the idea that every disease consisted of something material, which attacked sometimes one part, sometimes another, and which it was the physician's chief aim to eliminate; hence the terms *materia peccans*, acrimonies of the blood, acids, phlegm, black and yellow bile, etc. These notions, in spite of modern pathology, still retain their influence on practice. It is, however, certain, that we cannot judge of the use of remedies on such grounds, but only by a knowledge of the action of the remedy on the healthy body on the one hand, and an acquaintance with the natural course of disease, uninfluenced by remedies, on the other. This was first stated by Gideon Harvey, in his work, "*Ars Curandi Morbos Expectatione*, Amstelodami, 1695," where he says boldly that "it would be proper to write on the patient's prescription only the word, *Expecta*." But this expectant method seemed a neglect too cruel to be practised in dangerous diseases, until Hahnemann showed that fevers and inflammations were often as successfully treated by decillionths as by the Hippocratic apparatus of venesections and counter-irritation; whereupon physicians and clinical professors, convinced of the real nothingness of decillionths, resorted to the treatment of febrile and non-febrile diseases by the pure expectant method, and were thus enabled to study accurately the natural course of disease. Wherever their results were as successful as the older heroic practice pursued "*lege artis*," it was obvious that the latter was at least unnecessary, that the cure was done by nature in spite of heroic remedies: "*Natura et morbum et medicum vincit*." Nevertheless, some practitioners, who admit all this in regard to certain diseases, plead for counter-irritants to the skin in the class of affections called *rheumatism*, believing that the peripheral irritation will relieve the deeper seated parts. But how often do these remedies, from simple rubefacients up to the "horrible invention of the moxa," fail; so that where cases improve, it is rather *during* than *by* the treatment. An impartial examination would show that as many rheumatic affections get well under homœopathy, hydropathy, electricity, or the plasters of quacks, as under counter-irritants.

Moreover, the excuse that it is necessary to do something to relieve suffering, and that blisters, etc., do no harm, is incorrect, as they often leave indelible marks on the skin. while hot and cold douches, lotions, liniments, and plasters do not, and yet afford as much relief. In diseases of the eye, also, the applications of leeches and blisters, which were formerly always used, are now condemned by many ophthalmologists. Clinical experiment in Hebra's practice gave similar evidence. Suppose on the thigh of a patient an eczema rubrum of the size of a crown-piece; place at two inches distance on one side a blister of the same size, on the opposite side a sinapism, and at the two other poles, tartar emetic ointment and croton oil. The artificial irritants will produce here bullæ and redness, there pustules and vesicles, but without at all diminishing the intensity of the central eczema. On the contrary, the latter often spreads to and includes the irritated surfaces, and becomes larger than before. Now, if in the same organ or tissue (the skin) a peripheral irritant cannot draw away and dispel a central affection of a similar kind, how can cutaneous irritation be expected to dissipate the morbid condition of the pleura, lungs, brain, peritoneum, eyes, sheaths of nerves, etc.? What new path do revulsives open up for the elimination of morbid products deposited in these cavities and organs? But cutaneous irritants, continues Prof. Hebra, are not only useless, but often do harm, and their pernicious effects may either last long, or even put life in peril. It is, for instance, a well-known fact that the exanthemata, smallpox, measles, and scarlet fever, are more fatal in proportion to the intensity and

amount of the cutaneous eruption. And experience teaches that the eruption is more abundant on parts of skin where an irritation or dermatosis (*e. g.*, an eczema) previously existed. A sinapism, applied to the chest on account of dyspnoea, will cause a larger amount of pocks to appear there, and if there were a counter-irritant large enough to cover the entire integument, a simple variella might be converted into a fatal variola. Indeed, even the irritation of cold water in excess, applied hydropathically around an eczema, will cause its extension over the whole skin; and often the abuse of acarioidal remedies—*e. g.*, the sulphur fumigations in vogue a few years ago—produces a horrible eczema over the whole external surface; often hot baths, pushed by some as an infallible remedy, diffuse instead of arresting a skin disease. The tartar emetic ointment, applied to the scalp in chronic hydrocephalus, causes no diminution of the effusion, while the pustular eruption is very painful, and may give rise to purulent absorption and erysipelas. A blister behind the ear is often the starting point of an eczema which affects the concha, the face, and hairy scalp, and which, under unsuitable treatment, may last for years, causing great pain, as Hebra has often seen, without improving an ophthalmia in the least. Leech bites on the temples are followed by incurable white triangular cicatrices, which certainly are no ornament to a pretty face. The marks of cupping, too, on the neck and arms of women, are often a serious disfiguration. Issues in the arm to prevent relapses of ophthalmia, or of cerebral congestions, or as derivatives from skin diseases, are not only useless for their intended purposes, but are very troublesome and frequently become the source of eczemas which spread over the surrounding integument. Even the discolorations which sinapisms leave behind, entail a lasting defect when applied to the neck or chest in females. Sometimes, indeed, a fatal result may be caused through the application of counter-irritants in typhoid fever, pneumonia, or smallpox, in consequence of the blistered surface being the seat of *cutaneous diphtheria*. The tinct. of arnica, introduced by homœopaths, if diluted, as they use it, is harmless; but if applied in a concentrated form, it causes redness and swelling of the skin, which in sensitive individuals develops into an eczema which spreads over a large surface and even the whole skin, and requires months to heal, confining the patient to bed for a longer period and a worse condition than the affection would have done for which the arnica was administered. Many of these artificial skin eruptions, bullous, vesicular, and pustular, do not cease when the counter-irritant which caused them is removed, but last for weeks, months, or years. They can then no longer be distinguished from the idiopathic skin diseases, eczema, pemphigus, ecthyma, impetigo; and were the common theory true of the protective influence of counter-irritation, these skin diseases ought to afford a security against internal diseases in proportion to their amount. In that case, no persons should be healthier than the subjects of general chronic pemphigus, which should afford means of eliminating all kinds of peccant matters from the system. On the contrary, however, experience teaches that exudative eruptions covering large surfaces, especially in the form of vesicles, blebs, or pustules, not only exhibit no preservative power, but the reverse, exerting a disastrous influence on the general health, and becoming a frequent source of fatal issues. *Lazarus* was always regarded as a collection of all kinds of diseases, requiring providential intervention for his cure! Veterinary art exhibited similar prejudices till a few years ago. Diseased animals, especially horses, used to be tortured with all kinds of cauteries and corrosives; and farriers were in repute with the ignorant in proportion to the cruelty of their treatment. But thanks to the heads of the medical department in the Veterinary Institute of Vienna, such practice is now obsolete there, and results equally satisfactory are now obtained by the expectant method as were formerly got by those cruel manœuvres. Veterinarians, in this respect, according to Hebra, might serve as a model for physicians. "It would be desirable," he says in conclusion, "that every physician, before applying a counter-irritant to his patient, should ask himself the question, whether, if he were ill, he would treat himself in the same way? Indeed, it has rarely happened to me to see physicians who would have subjected their own persons to the application of issues, moxas, and setons. Yet, let not the physician forget the commandment, 'Do not that to others which you

would not have done to yourself,' when, at the bedside of his patient, he finds other remedies unavailing, and is tempted to have recourse to epispastics as his last resort. He ought always to remember that his mission is to relieve pain, and wherever his attempts to do so fail in spite of all his efforts, he can console himself with the assurance that he has at least caused no superfluous suffering."—*Edinburgh Med. Journ.*, Nov. 1867, from *Allg. Med. Zeit.*

The editor of the *Edinburgh Journal*, while justly remarking that he cannot altogether agree with the Professor, justly remarks: "Humanity demands that remedies should be as painless as possible, provided they be effectual; but it is, above all, essential that they be effectual. A do-nothing practice cannot last: it is a transition period only; but close observers will perceive that modern medicine is passing beyond the stage of expectancy, which was necessary to found a natural history of disease, and that while the means employed will be fewer and simpler—often less heroic in appearance, but really more potent than the older therapeutics—they will be administered with immensely greater, because with scientific precision, and with almost certain benefit. But the problems of medicine require time and labour to be worked out, even with the abundant energy of a modern age; and till they are worked out, some amount of expectancy and of prudent empiricism is necessary, and is, even now, infinitely more successful than blind and rash routine or a random prescription of new remedies. Fortunately, in spite of erroneous current theories, judicious physicians have existed in all ages. Meanwhile, free questioning of remedies, in a proper scientific spirit, can only end by establishing what is excellent."

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICAL MEDICINE.

14. *Changes of the Capillaries in Cerebral Softening*.—MM. PREVOST and COTARD demonstrate that, if granulo-fatty degeneration of the capillaries and their aneurismal dilatation may and should, in a certain number of cases, be considered as the primary lesion which acts as the producing cause of softening of the brain, these same vascular alterations may be secondary, and depend, like the concomitant alteration of the nerve-tissue for instance, on arterial obliteration. They appear, also, to be capable of secondary production, whatever may be the producing cause of the necrobiosis of the nerve-tissue.—*Brit. Med. Journ.*, Jan. 25, 1868, from *Archives Gén. de Méd.*, Jan. 1868.

15. *Pathology of Locomotor Ataxy*.—In the *Transactions of the Biological Society of Paris* for 1866, we find an interesting observation made by MM. CHARCOT and BOUCHARD, who decide what are the medullary lesions of the commencement of locomotor ataxy. In a case where the patient presented only the premonitory symptoms, and where the acute pains of the ataxy were present without disturbed co-ordination of movements, the autopsy revealed commencing induration of the posterior columns of the spinal cord (conjunctive neoplasia of the posterior columns with integrity of the nerve-tubes). This observation furnishes an argument against the opinion which tends to rank locomotor ataxy amongst the neuroses, and to consider the sclerosis of the posterior columns as a lesion consecutive to the functional disorders of that portion of the cerebro-spinal axis.—*Ibid.*

16. *Albuminuria in a Child Seven Weeks Old*.—Mr. G. F. HELM records (*Lancet*, Jan. 18, 1868) a case of this. The child was a fine one when born, but was afterwards troubled with almost constant vomiting. The mother having no milk, the child was fed by hand. It became extremely emaciated, no kind of food agreed with it, and it died when about eleven weeks old.

Mr. H. thinks it was a case of albuminuria from imperfect digestion and assimilation of the albuminous constituents of the food; for, though the kid

neys presented, at the autopsy, some spots of congestion, they could not be considered as diseased.

17. *Action of Putrid Material on the Animal Organism.*—The following conclusions have been derived by Dr. MORIZ HEMMER, of Munich, from his researches on the nature and action of putrid fluids. 1. Putrid infection causes severe acute inflammation in the intestinal mucous membrane and the glands of the chylipoietic system. 2. It excites very violent central irritation. 3. By it the blood is changed into a dark-coloured, thin, and scarcely coagulable fluid. 4. It causes the rapid approach of putrefaction. 5. The putrid poison is an albuminoid body undergoing change, not fluid or gaseous, but solid. 6. The poison acts in imperceptibly small doses; and, with regard to its intensity, can be compared only with the most active toxic agents known to us—some vegetable alkaloids, curare, the snake poison, etc. 7. It is insoluble in absolute alcohol, soluble in water. 8. It resists a heat of 100° centigrade. 9. It acts as a ferment, and induces zymotic changes in the blood. 10. The action of the putrid poison is exerted on the albuminoid materials of the plasma of the blood. 11. An analogy may generally be recognized between putrid infection and the infectious diseases. 12. The morbid material of the infectious diseases are, therefore, putrid poisons, and possess the properties of the same. 13. The varying action of the morbid materials in the infectious diseases depends upon a special modification of the putrid poison.—*Brit. Med. Journ.*, Dec. 28, 1867, from *Blatter f. Staats-Arzneikunde*, No. 29, 1867.

18. *Infusoria in the Air expired in Whooping-Cough.*—On April 2d, 1867, M. POULIER addressed to the French Academy of Sciences a note on this subject. On the 5th of August last he sent to the same learned body an account of some subsequent observations made by him. He states that an epidemic of whooping-cough in the place where he resides afforded him the opportunity of examining the breath of many children affected with the disease, and that in the vapour collected by the method described in his previous communication, he found, on microscopic examination, a world of minute infusoria, which were in all cases identical. The most numerous, as well as the most minute, belonged to a species described by some under the name of *Monas termo*; by others *Bacterium termo*. Another species, found in smaller numbers, were the *Monas punctum* of Müller, *Bodo punctum* of Ehrenberg, and which are usually classed among the Bacteria, *Bacterium bacillus*. Thus he says that whooping-cough by the alterations of the expired air, belongs to the infectious diseases among which he has already studied under the same point of view, smallpox, scarlatina, and typhoid fever.—*Gazette Hebdomadaire de Méd. et de Chirurg*, Aug. 16, 1867.

19. *Lung showing the early stage of Cirrhosis.*—Dr. BASTIAN presented to the Pathological Society (London) a specimen of this taken from a man admitted into St. Mary's Hospital. The patient was moderately well nourished, and had been suffering from cough for many years, though he had been seized with symptoms of acute bronchitis only two days before admission. There was flattening of the chest anteriorly on the left side, and marked dulness over a great portion of this half of the thorax, whilst on the opposite side there was no dulness, but signs of recent bronchitis. There was great lividity of the face, and the man died after two days from the severity of the acute attack. Post-mortem: The upper part of the left lung had to be cut out of the thorax, owing to adhesions and the formation of a tough material of fibro-cartilaginous consistence at the surface, nearly one inch thick in some parts. Almost the whole of the upper lobe was dense and hard, being intersected in all directions by bands of white fibrous tissue. The lower lobe was also somewhat consolidated and indurated by new fibrous tissue. In the upper lobe there were a few dilated bronchi. No tubercle existed in this lung. The opposite lung also contained no tubercle; it was large and healthy, save that it presented all the appearances characteristic of acute bronchitis. Not a particle of tubercle in other organs of the body. Dr. Bastian had collected and analyzed thirty cases of this rare

disease. Two or three of these had been reported under the head of "dilated bronchi," and one or two others as cases of chronic pneumonia. He had found, from statistics furnished by Lebert and Barth, that by far the greatest majority of cases of dilated bronchi occurred in individuals who were over 60 years of age, whilst a very large proportion of the cases of cirrhosis of the lung occurred between the 16th and 40th year. Dilatation of the bronchi was an accident rather than an essential in cirrhosis, and either did not occur, or was very slightly marked, in one-third of the cases. With regard to chronic pneumonia, he was convinced, from the descriptions of Grisolle and Charcot, that the pathological condition to which they applied this name was in some cases the immediate sequence of an acute pneumonia, and, moreover, that the tissue change met with was precisely similar to that occurring in the early stage of cirrhosis. But inasmuch as in this condition the whole lung substance was infiltrated with a new fibre growth, its anatomical character was totally different from that of pneumonia, and therefore the name which had been hitherto given to it was altogether unsuitable. It was not a persistence of the anatomical characters of the acute disease, but the setting up of an entirely new process, merely a sequence of the original disease. Whilst Dr. Bastian believed, therefore, that the disease was usually a chronic one, in which a growth of new fibre tissue gradually took the place of the proper lung substance, he believed that in certain rare cases its onset might be more acute, and be the immediate sequence of an acute pneumonia.

Dr. Bastian fully recognized the importance of a due consideration of the relationship of this pathological condition to the indurations of lung tissue met with in phthisis. His attention has been particularly directed to this question because some pathologists refused to recognize cirrhosis of the lung as a distinct disease on the ground that all the so-called cases were instances of tubercular phthisis advancing to a cure. He knew how frequently fibroid induration of the cirrhotic kind was associated with tubercle, but he felt convinced that in certain cases pure cirrhosis might exist in individuals who were in no way tuberculous. In fact, his observations confirmed those of Dr. Sutton to the effect that persons suffering from this disease often had originally possessed large well-formed chests, and a physique the very reverse of that usually looked upon as phthisical. Of the 30 cases analyzed by Dr. Bastian, in only four was there any evidence of the existence of tubercle in one or other lung, and then it occurred in quantity altogether insignificant, so as to make its presence rather an accident than an essential.—*Med. Times and Gaz.*, Nov. 23, 1867.

20. *Intermingling of the Types of Fever.*—Dr. HENRY KENNEDY read before the Medical Section of the British Medical Association, at its meeting in Dublin, in 1867, a paper on this subject, in which he expressed his strongest convictions that the types of fever "are much more mixed up—intermingled, as it were—than is commonly supposed, or the books teach. He states "that while the types of fever may all usually be distinguished the one from the other, yet they are frequently conjoined, or glide the one into the other. I cannot doubt that this is the case as regards gastric and enteric fever; neither can I doubt that the relapsing fever and typhoid may coexist. I believe, too—and here I would wish to speak with much more reserve, on account of the many able physicians who differ from me—that I have often had to treat cases of typhus and typhoid conjoined."

There are two points which appear to him worthy of especial notice. "In two cases within the last year, the treatment adopted to check the diarrhœa of enteric fever proved somewhat too potent; but what was the effect on the patients? It literally changed, as I believe, the very type before my eyes; and what had begun with all the signs of enteric fever ended literally in typhus. In each case, the diarrhœa (and I may state, in passing, the discharges were most characteristic) suddenly ceased, and the brain became seriously engaged."

The second point "is the fact that in those cases of fever where, as I believe, typhus and typhoid coexisted, the duration of the attack was much longer than if the disease had been typhus alone, by a period of at least ten days. In other words, the attack, as far as duration went, occupied the number of days which

enteric fever usually runs—that is, five or six-and-twenty days. This fact appears to me one of moment, as showing, as far as the nature of the subject admits, that a something was present in these cases which prevented the attack ending in fourteen or fifteen days, which is the common course of typhus; and that these cases partook of this character, was proved by the presence of a copious petechial rash. I must leave to those who hold different views from my own the explanation of this fact.”—*British Med. Journ.*, Jan. 18, 1868.

21. *Zymosis—A new Antiseptic Salt.*—Dr. SANSOM, in a paper read before the Medical Society of London, gave an outline of the theory of zymosis. In tracing the origin of infecting particles, we may, he said, divide them into two classes—First, those arising from the animal world, such as variola, vaccine, pyæmia; and secondly, those arising from the vegetable world, as favus, thrush, and, if we are to believe a large mass of scientific evidence, diphtheria, ague, &c. But whether animal or vegetable, it cannot be determined with accuracy whether the *materies morbi* is, at the period of infection, one or the other. It is best, under such circumstances, to call it “germinal matter.” Dr. Sansom then related a series of cases which had occurred in his practice, all of which were united by close relations of time, place, and circumstances, and in one of which the “*oidium albicans*” was discovered as a prime factor in the disease. The author then discussed the operation of disinfectants. He divided them into three classes—First, those which alter the chemical constitution of the *materies morbi*, such as chlorine and iodine; secondly, those which act partly chemically and partly vitally, such as the sulphites; and thirdly, those which act only on organized material, arresting vitality, such as carbolic acid. The treatment of zymotic disease by the internal administration of the sulphites was then considered, and forty-one cases were brought forward in which they had been employed, and in which one death only occurred. The facts seemed to be that the sulphites are the most easily absorbed of our internal antiseptics, but that carbolic acid is the most powerful. The author concluded by saying that the great desideratum was a salt which should combine the two. This desideratum Dr. Sansom had succeeded in fulfilling, and specimens of compound salts, the sulphocarbolates, were exhibited to the Society.—*Med. Times and Gaz.*, Feb. 22, 1868.

22. *On Excess of Urea in the Urine as a guide to the Diagnosis and Treatment of certain forms of Dyspepsia and Nervousness.*—Dr. FULLER read before the Royal Medical and Chirurgical Society (Nov. 26, 1867) a paper on this subject. He began by stating that, in the year 1864, his attention was arrested by the existence of a great excess of urea in the urine of a patient whom he was treating for dyspepsia, accompanied by strongly marked nervous or hypochondriacal symptoms. The amount of urea in a given bulk of urine was so great that, on the addition of nitric acid, crystals of nitrate of urea began to form in about twenty minutes, and ultimately filled the interior of the test-tube. This condition of the urine has never been described as a feature either of dyspepsia or of nervousness; and as, from its persistency in the case under observation, Dr. Fuller was inclined to regard it as an essential feature of the malady, he resolved in future to search for urea in the urine of every patient who presented a similar train of symptoms. The result has been that he has discovered an excess of urea in twenty-seven patients; twenty-six of whom were males, varying in age from twenty-three to fifty-four. After describing the general symptoms by which this condition of the urine was accompanied, Dr. Fuller gave the details of two well-marked cases; and stated that since his attention had been directed to the subject he has seldom been disappointed in his expectation of finding an excess of urea when the symptoms have led him to suspect its existence. Without exception the patients have been tolerably healthy in appearance, and often somewhat florid, though in some instances they have lost flesh slightly—indeed, their aspect has been so little indicative of disease, and their complaint of suffering has been so constant and so urgent, that any practitioner who did not examine the urine for urea could scarcely fail to regard them as simply hypochondriacal. Their complaint has been of flatulence and acidity, extreme languor, restlessness at night, and distressing nervousness.

Even a moderate amount of exertion has induced fatigue, so that they have abstained almost wholly from exercise. This last Dr. Fuller regarded as an important feature of the complaint, inasmuch as it bears upon the point which was next discussed—namely, the source of the excess of urea. He maintained, by reference to the history of the cases and to the marked indisposition to and incapacity for exertion, whether mental or bodily, manifested by sufferers from this complaint, that the urea is not formed, solely at least, during the destructive processes of assimilation as a consequence of the wear and tear of the tissues—the source whence urea is commonly supposed to be derived—but is due to the production of urea from the elements of the food during the primary processes of assimilation, probably as a consequence of perverted nervous action. In conclusion, Dr. Fuller mentioned several circumstances which induced him to believe that this affection is nearly allied to gout.—*Med. Times and Gaz.*, Dec. 14, 1857.

23. *Intermittent Pulse and Palpitation.*—Dr. B. W. RICHARDSON concludes an interesting lecture on this subject with the following practical precepts:—

“There is, of course, no known specific for intermittent heart, but, whenever the symptom of intermittency is present, there are certain general lines of treatment which should always be enforced by the physician.

“1. In the case of young children, when the intermittency is clear, however infrequent it may be, the utmost care should be taken to avoid every source of mental excitement. A child so circumstanced should, under no pretence and for no purpose, be oppressed with study. He should be subjected to no amusements which powerfully excite the mind; he should at no time be exhausted by physical fatigue; he should be well fed, warmly clothed from head to foot, and, above all things, should be allowed to have abundant sleep. Ten to twelve hours' sleep is not a whit too much. Moreover, such a child should never be put to sleep with stories which excite dreams or cause alarm.

“2. In adults equal care should be taken, and, above all things, attempts should be made to remove impressions derived from any untoward event. Change of scene in this way often proves of essential service, while a carefully regulated diet, abstinence from exhausting pleasures, and abstinence from exhausting labour, especially mental labour of one particular kind, should be encouraged. Good sleep is here again the most valuable of remedies. Eight hours of sleep out of the twenty-four are essential—nine are still better. Two special points of advice are of vast moment to such persons. It not unfrequently happens that, by accident or by direct information, they learn the fact that their pulse does intermit. Then they begin to feel their own pulse, and become charged with dread of sudden death. As the disorder is of itself cerebral, this watchfulness and fear increase the frequency of the intermittency. With these patients, a word from the physician timely and firmly spoken is often the best prescription. You assure them on your experience that their malady is not of necessity fatal; you command them not to inquire after the symptom, and if you can succeed in persuading them to your views, which you may honestly try to do with all your influence, you will effect the most marked improvement in their condition. Again, it sometimes happens that patients conscious of the failure of the heart resort to alcoholic stimulants as a means of relief. For a moment, by exalting the cerebral activity, they experience relief from the alcohol, but the depression that follows calls the more rapidly for a return to the supposed remedy, and a factitious benefit leads to a habit which excites structural changes, and, of all things, hastens death.

“3. In case of sudden intermittency with symptoms of cerebral congestion, depletive measures are sound. A purgative is essential, and blistering at the back of the neck is always useful. I have seen great advantage in these cases from abstraction of a moderate quantity of blood by the cupping glasses.

“4. In the extreme forms of cardiac intermittency, while all the general rules laid down in Nos. 1 and 2 hold good, it becomes often imperatively necessary to subdue cerebral excitement, and to induce cerebral rest. For this latter purpose, opium is the sheet anchor. It must be given freely when it is given, and not too frequently. Small and repeated doses of opium excite, depress,

and give no rest. A full dose, equivalent to a grain or even two grains, on the contrary, produce no excitement, but gives sound sleep, and that quietude of cerebral circulation which is essential to secure satisfactory relief. I have sometimes, where there was much depression, combined full doses of opium with full doses of quinia, and with marked benefit.

"5. Concerning old people who suffer from what may be called chronic intermittency without oppressing symptoms, no special rule requires to be laid down. They are themselves usually too tired of the excitements of life to care for them, and if they are not, then the observance of the general principles applicable to children and adults extends equally to them."—*Med. Times and Gaz.*, Jan. 18, 1868.

24. *Peroxide of Hydrogen as a Remedy in Diabetes.*—Dr JOHN DAY records (*Lancet*, Jan. 11, 1868) a case of diabetes which had resisted all ordinary treatment for three years, and which is now rapidly yielding under the influence of the ethereal solution of the peroxide of hydrogen, given in half-drachm doses mixed in an ounce of distilled water, three times a day.

25. *Arsenic in Phthisis.*—In a paper recently read at the Academy of Medicine, M. MOUTARD-MARTIN arrives at the following conclusions: 1. Arsenic exerts a very positive action in pulmonary phthisis. 2. It is more efficacious in the slow and torpid form than in that which is accompanied by fever. 3. Rapid phthisis and the acute granular form undergo no modification under it. 4. In a great number of cases, even in advanced phthisis with hectic, the general condition of the patient is ameliorated, at least for a certain time, which may long continue. 5. The modifications in the local lesions are only produced at a later period. 6. In a certain number of cases a cure results, and these would be more numerous if the patients had more perseverance instead of too soon believing themselves cured. 7. In order to prove efficacious, the treatment must be long continued. 8. The quantity taken daily need not exceed two centigrammes. 9. The arsenic is tolerated best in the early stages of the disease. 10. When not carried beyond the quantity stated, the tolerance may be almost indefinitely prolonged. 11. The action of the arsenic is primarily corroborant, acting secondarily on the pulmonary lesion.—*Med. Times and Gaz.*, Jan. 18, 1868, from *Union Méd.*, No. 3.

26. *The "Vaporarium" as a Means of Treating Phthisis Pulmonalis.*—Dr. FELIX BRICHETEAU strongly recommends to the attention of physicians the application of the "vaporarium" in the treatment of phthisis pulmonalis. The honour of first proposing and testing this method appears to be due to Professor Troussseau, whose recent death we all unite in deploring. Drs. Galliet and Henri Henrot have since employed it in several cases of phthisis, as well as in various chest and throat affections, and from their experience the greater portion of the evidence in its favour is derived. It is scarcely necessary to explain that the "vaporarium" is a chamber filled with the vapour of water, in which the patient constantly resides for a more or less extended period. To obtain a warm and moist atmosphere, two plans are recommended. The first is applicable to hospitals, and to such establishments as possess the convenience of steam-pipes. To one of these a tube is attached, that leads to a chamber in which is placed a trough of considerable depth, and with a large exposed surface. This tube is made to enter the bottom of the trough, and the steam thus passes through the contained water, and causes the required evaporation.

The second method may be used in the absence of steam-pipes. It consists essentially of a small boiler, heated by a gas or other lamp, and having a tube to conduct steam into the lower part of a trough containing water, from the surface of which a rapid evaporation of warm water is thus caused.

For a room of ordinary size, a trough one yard and a half long, and about ten inches deep, is sufficient; and with this a temperature of between 74° and 80° Fahr. may be readily maintained.

As yet the experience with the "vaporarium" has not been extensive. Three cases of confirmed phthisis have been perfectly cured; two inveterate (opini-

âtre) cases of the same disease have been relieved; one case of croup was rapidly cured; and one of œdema glottidis, which had resisted all other means, was cured in a few hours. Details are given of several of these cases, and from the description of the physical signs, there can be no doubt as to the genuineness of the phthisical affection.

In a few instances, patients derived no benefit from their abode in the "vaporarium." Among these were suffers from very advanced phthisis, and the greater number of those treated for croup.

Dr. Bricheteau, with apparent justice, ascribes the value of the "vaporarium" to the convenience that it affords of imitating a warm and moist climate. It places at our disposal a constant temperature and an atmosphere loaded with moisture; and a room may easily be constructed in large dwelling-houses or in hospitals where such a warm and moist atmosphere as is so advantageous to a large class of patients may be constantly maintained. In addition, the air of the chamber may be impregnated by medicinal substances, such as sulphurous acid, tar, carbolic acid, or iodine, if these be placed in the trough of water through which the steam passes.—*Ed. Med. Journ.*, Jan. 1868, from *Bull. Gén. de Thérap.*, July 30, 1867.

27. *Phosphorus in the Treatment of Paralysis.*—M. DELPECH has obtained the best results from the employment of phosphorus in paralysis. There are at present three cases in his ward submitted to this mode of treatment. In one case the disease had been brought on by the prolonged employment of sulphide of carbon; in another, by the effects of cold; and in the third, by an attack of apoplexy. The phosphorus acted at first as an aphrodisiac, producing erections, and thus manifested its peculiar action on the genital organs: mobility and sensibility were then favourably modified, without any apparent inconvenience attributable to the employment of the remedy.

28. *Bromide of Potassium in Whooping Cough.*—Dr. DE BEAUFORT has observed, in the course of his practice, that the use of bromine was attended with very good effect in the treatment of whooping-cough, and he anticipated such a result. For, according to his view, the principal symptomatic phenomenon which distinguishes whooping-cough from a simple catarrh, is the exaltation of sensibility in the laryngeal mucous membrane, especially towards the upper orifice of the larynx. This hyperæsthesia excites, by reflex action, the convulsive cough and the contraction of the larynx, and consequently a medicine like the bromide of potassium, which exerts such a remarkable anæsthetic action ought to arrest the principal symptoms of whooping-cough, and to reduce the disease to its catarrhal element. The bromide, in the hands of Dr. De Beaufort, rapidly produced the desired effect, and in twenty cases, taken at different periods of the disease, laryngeal spasm was found to disappear in five days on the average, and the disease was converted into a bronchial catarrh. The patients, however, were not cured, but their condition was altered; there was no more anxiety or vomiting, the appetite was improved, the nutrition was better, and the strength was increased. Such a rapid result was very satisfactory, but Dr. De Beaufort desired to complete the cure, and he therefore endeavoured to find some other medicinal agent, which might effect, in combination with the bromide, what the latter was insufficient to accomplish alone. The substances which he found most efficacious were aconite and the *Balsam of Tolu*, and he publishes a formula in which the syrup of balsam of Tolu, bromide of potassium, and an alcoholic preparation of aconite are combined together. By the aid of these three remedies he has seen whooping-cough cured in twelve days on the average.—*B. and F. Med.-Chir. Rev.*, Jan. 1868, from *Bull. Gén. de Thérap.*, May 30, 1867.

29. *On the Solvents of Pseudo-Membranous Exudations and on the Employment of Bromine in those Diseases.*—Dr. CH. OZANAM, formerly librarian to the Academy, in a memoir published in the number of *Revue de Thérapeutique Médico-Chirurgicale*, for January 1, gives an account of his experiments with various articles made with a view of ascertaining the best solvents for diphtheritic exudations. The one which effects their solution in the shortest time—

even in a few minutes—is the amoniuret of copper (liquor of Schwitzer). This liquor may be given in doses of from two to twenty drops during the day in one or two glasses if for an adult; it cannot be given to children on account of its very bad taste.

He prefers, however, an aqueous solution of bromine in the proportion of one drop in twenty-five to thirty grammes (about an ounce) of pure water. It must be kept in a well-ground glass-stoppered vial and in the dark, and when it loses its amber colour it should be renewed. This solution is to be given in drops every hour, in as many teaspoonfuls of sweetened water so as to give one or two grammes (thirty-six grains) of the solution in the twenty-four hours. When well sweetened, children take this without difficulty.

Dr. Ozanam also gives the bromine in fumigation in the following manner: He takes a bowl of boiling water and places over it a funnel of glass or of paper. He puts into the water a large pinch of bromide of potassium or of common salt, and afterwards adds gradually two or three times within the space of from five to ten minutes a teaspoonful of the bromine water. The patient must inhale slowly and deeply the vapour which mixed with the steam of the water does not produce any irritation.

Dr. Ozanam asserts that he has cured by this simple method more than one hundred and fifty cases of membranous croup. Up to the period of his writing he had failed in not more than four or five cases; and these were cases of membranous croup.

While he recommends this as the principal remedy, other means which may seem to be called for should not be neglected.

30. *External Use of Digitalis in Suppression of Urine.*—Mr. J. D. BROWN records (*Med. Times and Gaz.*, Jan. 25, 1868) six cases of suppression of urine treated by the external use of digitalis. He used the leaves, bruised and warmed in boiling water, as a poultice, and also the tincture of the plant mixed with a warm flaxseed poultice and placed on the abdomen.

He reports these cases, he says, “with the object of calling attention to the effect of digitalis in that dangerous disease, and of inducing the medical world to give it a trial. It is not supposed that it will succeed in all cases of that mysterious disease; but it is clear that it has a powerful influence over the renal secretions, and if carefully watched, taking the pulse as a guide, no mischief need be feared.

“The rules of management,” he states, “must depend upon the pulse.” I have seen no good results till the pulse fell in number; it matters not from what figure: fall it must before any change occurs. In Mr. G.’s case it fell from 109 to 70, in ninety minutes; in Mr. R.’s, from 80 to 65 in three hours and a half. I would strongly advise 60 as a standard from a high number; 40 or 50 from a lower figure—say from 80. Judging from the effects on the circulation, we cannot lose sight of the fact that the arrest of secretion depends on capillary congestion, which in turn might, by pressure, paralyze the nerves. The fact, however, remains that we compel the kidney to resume its functions by diminishing the force of the circulation, lessening the quantity of blood by allowing a much longer interval between each new arrival. Strange, too, it is that in four cases the attack commenced suddenly like a fit of stone, and, in reality, stone came away in each case.”

We would urge upon our readers who may be disposed to try this remedy great caution in its use, for it is manifest, from one of Mr. B.’s own cases, that the fatal result was in a great degree due to the reckless use of the remedy.

31. *Hot Bath in Erysipelas Ambulans of Young Infants.*—Prof. ABELING, of Stockholm, speaks in the highest terms of treating this form of infantile erysipelas by means of hot water. The infant is put into the bath at a temperature of 38° C. (100° F.), and hot water is gradually added until a temperature of from 40° to 42° C. (105° to 110° F.) is attained. After from ten to thirty minutes, according to the age and strength of the child and the influence produced, it is removed and wrapped in warm linen, which is covered over with a warm blanket. In this it is allowed to remain for two hours. Usually it at

once falls into a tranquil sleep; but when this is not the case a teaspoonful of cold water is repeatedly given. In bad cases the bath is given twice a day, but in ordinary cases only once, continuing it until improvement is effected.—*Med. Times and Gaz.*, Feb. 22, 1868, from *Journal für Kinderkrankheiten*, October.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

32. *Recovery after supposed Partial Dislocation of the Neck.*—Mr. J. B. MARTIN communicated to the Royal Med. and Chir. Society the following case:—

Emily M., aged 24, nurse, a stout, healthy country girl, of active habits and intelligence beyond the average of her class in life, returned home on the evening of Monday, July 29th, with the children under her charge, between eight and nine o'clock, and having placed the pony-chaise they had been using in the barn, was in act of closing the doors, when the left-hand door (an oak one, weighing 480 lbs.) fell, striking her on the side of the head, and carrying her with it to the ground. On assistance arriving, and the door being removed, she was totally unable to raise herself, being completely paralyzed, and suffering from difficulty of breathing. When raised from the ground, her head was bent forward, and slightly to the left side, and she had no power to raise it. She was placed in a chair, and, upon her fellow-servant endeavouring to raise her head, she felt and heard something go into its place with a snap; after which she so far recovered herself as to move with assistance, though with great difficulty, into the house, when she became faint, and vomited slightly, but was able after a short interval to retire up stairs. The faintness and nausea continued more or less during the night, with pain in the head and neck, and inability to move without assistance. The recumbent position was painful, and she was moved into an arm-chair, where the head was supported by pillows, affording great relief. She was seen for the first time about noon the following day. The countenance was pale, the expression somewhat stolid, and the features were swollen. The surface of the head and neck, especially on the right side beneath the angle of the jaw, was morbidly sensitive, and there was a dread of even a hair being pulled. She was perfectly conscious; there was no intolerance of light; the pupils were natural; the skin soft and cool; pulse 84, soft and regular; she had numbness of the right hand and arm, with partial inability to move them; slight ptosis of the right eyelid; and difficulty in opening the mouth, being only able to protrude the tip of the tongue; she could only swallow liquids. She was ordered to be kept perfectly quiet; the head and neck to be well supported; the hair to be removed, except just in front; to apply an evaporating lotion to the head, and fomentation to the neck by means of spongio-piline. In the evening she was rather more comfortable, free from constitutional disturbance, and had had a short nap. She retired to bed, but was obliged to resume the position in the chair. She continued gradually to improve from day to day; and on the 3d of August, five days after the accident, she was able to obtain rest in bed, when well supported by pillows. The position in the chair was still the most comfortable, and she was accustomed for some days after to rise at 4 A.M. to resume her place in it. Her improvement was progressive throughout, with the exception of a brief return of headache in consequence of excitement. On the 21st, three weeks after the accident, she was allowed to walk in the garden towards the cool of the day. The ptosis of the right eyelid had disappeared, and the countenance had resumed its natural expression. The power over the right arm, although still imperfect, was gradually improving; she carried her head in a stiff and formal manner, with a drooping forwards, until the beginning of October, when she recovered by slow degrees control over the motions of the head. The morbid sensibility of the surface of the head and neck, with pricking of the skin, and occasional pain

under the jaw, continued more or less for a fortnight, and there was likewise up to that period a sense of falling backwards, if unsupported, or any attempt made to raise the head. The treatment consisted in keeping the patient perfectly quiet, in the upright position, with the head well supported by pillows, low diet, an evaporating lotion to the head, and fomentation to the neck by means of the spongio-piline.—*British Med. Journ.*, Feb. 15, 1868.

33. *Fracture of the Clavicle—Difficulty of Diagnosis.*—M. GUERIN exhibited to the Imperial Society of Surgery the clavicle of a man aged sixty, which had been fractured by the fall of a mass of earth. There had been no deformity, no ecchymosis, no mobility of the bone, but on causing the man to make certain movements of his arm, slight crepitation could be perceived. This man died of pneumonia, which afforded an opportunity to examine the clavicle. The periosteum and soft parts were intact; pressure on the upper surface of the clavicle showed no mobility; but pressure on the inferior face caused a projection of the fragments. This result could not be obtained in the living subject, as it would be impossible to place the hand under the clavicle.—*Gazette Hebdomadaire de Méd. et de Chirurg.*, Sept. 20, 1867.

34. *Fracture of the Jaw, through the Neck of the Right Condyle, from a Blow on the opposite side of the Face.*—Surgeon J. B. COCKBURN, M. D., Royal Engineers, describes (*Army Medical Reports*, 1863) an example of this rare injury caused by a blow of the fist. The alveolar process was displaced to the left side, to the extent that the canine tooth of the right side corresponded with the central incisor of the right superior maxilla. This displacement was purely lateral. The lower jaw was in no way protruded or drawn backwards. A very moderate amount of pressure inwards, with the slightest inclination upwards, restored the parts to their normal position. The least attempt to open the mouth caused much pain at a point close to the tragus of the right ear. It was easy to guess the nature of the injury, and it required little manipulation to detect a simple fracture of the condyloid process of the right side, at a point very close to the insertion of the external pterygoid muscle. In fact, from the very partial disengagement of the two fragments, the fracture was diagnosed to have occurred at the very point of insertion of this muscle. A case of simple fracture of one condyloid process, from a *contre coup*, has never yet, as far as he was aware, been recorded; and in this instance, the symptom which Professor Hamilton, of New York, points out as an important diagnostic mark between a fracture of the condyloid process and a dislocation of one condyle, was not present—namely, the inclination, in case of fracture, of the chin to the side on which the solution of continuity has taken place. The fracture was put up with a splint of gutta-percha moulded to the lower jaw, the usual chin sling bandage, and with a piece of cork between the teeth; and the results have been in every way most satisfactory.—*Brit. Med. Journ.*, Dec. 23, 1867.

35. *Subperiosteal Resection of the Elbow.*—M. OLLIER, who has attached his name to subperiosteal resections, has lately brought three cases before the Medical Society in which he resected all the processes of bone entering into the articulation of the elbow. By very careful management, and minute care, the periosteum and tendons inserted into it, were carefully preserved. The result in the three cases mentioned has been the complete regeneration of the joint, both as to form and movements. That such complete success may be attainable where excision of the articulation is necessitated by a recent injury, can be easily understood; but when the joint has been long the subject of caries, when the periosteum itself has been destroyed by chronic morbid processes, it is difficult to believe that much of that membrane can be made available for regeneration of bone. At all events, M. Ollier's cases will prompt every surgeon performing resection to preserve as much of periosteum and insertion of tendons as possible.

36. *On the Suture of Bones.*—Dr. BÉRENGER FÉRAUD, in an interesting paper in numbers 39, 40, and 41 of the *Gazette Hebdomadaire* for 1867, gives a sum-

mary of sixty-six cases, some hitherto unpublished, but mostly collected from various sources, in which one or another form of suture has been employed in the various lesions of the bony system. Our readers will doubtless recall the very excellent results obtained in cases of ununited fracture by the use of sutures combined with the preservation of the periosteum, as detailed in Dr. Bigelow's pamphlet noticed in the number of this Journal for October, 1867 (p. 507).

M. Féraud's description of the method by which bone sutures may be best introduced is a very good one, and is illustrated with several wood-cuts.

All the different means of uniting bones by suture may be classed under two general heads, viz., the thread and the rivet. When a thread is to be employed it should be of metal and sufficiently malleable to be of easy introduction. No thread of organic material would furnish sufficient immobility to answer the purpose in view. When rivets are to be employed M. Féraud prefers them of ivory or of bone, believing that in some rare cases it is possible that they might be absorbed by the efforts of nature.

With regard to the cases to which bone sutures are applicable, M. Féraud very properly limits them to compound fractures and ununited fractures, in which less hazardous means have already failed. In the first class of cases (recent compound fractures) suture should only be used when coaptation of the fragments cannot be obtained by position alone. In ununited fractures, bone sutures may be considered an almost indispensable complement to the operation of resection.

M. Féraud also suggests the application of sutures after operations of resection for other causes than for pseudarthroses. If we are not mistaken the same suggestion (in the case of the knee-joint) has been recently made in Great Britain, if, indeed, the plan indicated has not been carried out in practice.—J. A. Jr.

37. *Lithotomy by a Semilunar External Incision.*—Sir WM. FERGUSON, in a very interesting lecture (*Lancet*, Jan. 4, 1868), discusses the several methods of performing this operation, and proposes a new one which, however, differs from the ordinary one, only in the external incision, and the manner of performing, which he describes as follows:—

"The staff being introduced, the patient is to be bound and held in the ordinary way. The usual lithotomy knife, like a scalpel in a strong handle, is to be held in the right hand with its cutting edge directly upwards; the point is then to be introduced into the skin on the right side of the perineum, midway between the anus and the tuberosity of the ischium and a little lower than the anus. It may be inserted a quarter or half an inch deep; and, by a pushing or gliding movement upwards, the right side or end of the semilunar incision is made, then the curve, and then the slope on the left is completed. During the movement the knife is gradually turned round with the hand, whose radial margin, from being first turned downwards, is ultimately upwards. A second similar sweep, with the extreme ends not so deep, should next be made, when the fore and middle fingers of the left hand should be pushed into the wound between the bulb and rectum, with the intention of separating those parts; it will then be found that the anus and rectum can be depressed with peculiar facility. Now, too, with possibly a touch or two in the middle part of the wound, it will be found that the finger readily slips into the space between the erector penis and compressor urethræ; and the staff may be felt through the tissues between them and the membranous portion of the urethra. By a dexterous push, the point of the knife may be introduced into the groove, or perhaps a little further cutting may be used to divide a portion of the lower margin of the triangular ligament and part of the levator ani, or these may be divided in withdrawing the knife. The point of the blade should be pushed along, say, one-half of the membranous portion of the urethra, into the prostatic portion, so as to notch or cut freely the left lobe of this organ, or the latter may be done in withdrawal. Should the gorget be preferred, it may be used after the opening has been made in the membranous portion. The subsequent steps are the same as in the ordinary lateral operation, excepting that the forceps may be held more to the right, and withdrawn through the middle of the perineum, instead of the

left side, as in the common way. Should the stone be large, the right side of the prostate can be more readily reached through this wound than through the lateral, and the good rule of pulling obliquely downwards in extracting can be more efficiently accomplished than through a wound in the side.

"The after-treatment is in all respects as in the usual operation, a tube being used or not, in accordance with fancy or fashion. The skin in front of the perineum immediately behind the scrotum being left entire, the wound is scarcely observable as the patient lies on his back. In one of my cases a surgeon of experience on looking at the perineum would scarcely believe that lithotomy had been performed until he made a closer examination.

"With the limited experience of only four cases, although three of them were adults, and comparatively unfavourable for operative interference, it would be wrong and beyond my wish to refer to this proceeding as specially superior to lateral lithotomy; yet I think it worth while to call the attention of my professional brethren to it from the conviction that it deserves trial, and with a hope that it may in some degree simplify, in regard to performance and danger, one of the most formidable and interesting operations in surgery."

38. *Cure of Cleft Palate in Children by Operation, with a Description of an Instrument for Facilitating the Operation.*—Mr. T. SMITH read (Jan. 14, 1868) before the Royal Med. and Chir. Soc., a paper on this subject. His object in presenting it was to communicate to the Society a plan of operating on clefts of the palate, applicable to all who suffer from the deformity, but especially to children, to those deficient in physical courage and in the power of enduring pain. No attempt is made to improve on the principles of staphyloraphy as laid down by Sir William Fergusson, though slight and inconsiderable modifications in that gentleman's practice are advocated, as more suited to the tender age of the patients for whom the plan in question is especially designed. The chief novelty in this proceeding is that chloroform can be employed. A painless and speedy operation can therefore be performed, and that with more precision and greater prospect of success than when the operator is dependent upon the self-control of the patient; while, from the painless nature of the operation, the cure of cleft palate can be effected in children, to whom formerly the benefits of staphyloraphy were virtually denied. The author discusses the probable advantages of the performance of the operation in early life, though he waits for a larger experience to fix the particular age at which it is best to attempt to cure the deformity. The plan of operating recommended depends chiefly for its success on the employment of a gag, whereby the tongue is depressed, the jaws can be opened and fixed, and the orifice of the mouth enlarged. This is adjusted when the patient is under chloroform. The modifications of the ordinary operation as suited to the insensibility of the patient are described. They consist chiefly in avoiding any considerable flow of blood until the very last step in the operation has been accomplished. The author recommends for children the employment of fine fishing gut and horsehair as the best materials for suture, and describes certain modifications in the ordinary shape of the needles employed and the manner of passing the sutures, which simplify and expedite the operation. The conclusions in the paper were supported by cases. In conclusion, the author stated that he trusted by the lapse of time and further experience to be able to determine the age at which an operation should be done, and the effect of an early operation on articulation and vocal resonance. Appended to the paper were the accounts of eleven cases where the operation for cleft palate had been performed in the manner recommended by the author—that is, with the aid of a gag, and under chloroform. In eight of the cases the operation was successful; three were failures. No operation had been attempted on the hard palate, though in nine of the cases the deformity involved the bony palate to a greater or less degree. The author expressed a belief that it would in many instances be unnecessary to perform any operation on the bony palate if the cure of the soft parts were effected in early life. In support of this belief he adduced three cases of operation where the soft palate only had been united, and where the hole remaining in the roof of the mouth had gradually contracted to very small dimensions.

Sufficient time had not elapsed since the operation in the author's cases to allow him to speak authoritatively on this subject. An easy method of fastening gut sutures without cutting the gut was described. Children were exhibited on whom the operation had been successfully performed, and one adult was also present, whose palate had been united by operation under chloroform. The author recommended the use of the gag and chloroform for adults as well as children in the performance of this operation. Though the effects of the operation in children on the powers of articulation had been at present highly satisfactory, the author abstained from making any definite statement on this subject, waiting rather for the lapse of time and additional experience to furnish fuller information.—*Med. Times and Gaz.*, Jan. 25, 1868.

39. *Tracheotomy in Croup*.—A communication was read to the *Société des Hôpitaux* de Paris, by M. ISAMBERT on this interesting and important subject. The case was an infant of sixteen months, and the operation was successful. He reports the case on account of the extreme rarity of successful cases at that age, and states that he is not aware of more than four cases in which tracheotomy has been performed successfully under the age of two years.

Of the cases cited in the paper and in the discussion which ensued, no case was recorded under thirteen months; and it was stated that no case even below two years had ever recovered from the operation in the public hospitals. M. ARCHAMBAUD gave the results of his own practice. Sixty-five cases of tracheotomy, and of these twenty-two were successful. All agreed on the almost certain fatality of the operation in the comparatively rare cases of croup in adults. M. ROGER quoted statistics to prove that the most favourable age is between seven and ten years; for while twenty-two to twenty-five per cent. only recover, taking all ages together, it is found that between thirty-two and thirty-three per cent. recover of those operated on between the ages of seven and ten.

Another very interesting paper on the same subject was read by M. BOURDILLAT (M. Bergeron's house-surgeon) on the results of sixteen tracheotomies for croup performed by him at the Hôpital Sainte-Eugénie, of which ten were successful. He also gives the statistics of the cases operated on at that hospital during the last seven years and a half. They reach the astounding number of 813, with 208 recoveries. The percentage of recoveries has been gradually improving, having risen in 1865-6-7 to 31, 35, and 40 per cent. respectively.

M. BAIZEAU, chief surgeon to the Military Hospital of Algiers, devotes a short paper to the subject of tracheotomy in infants below the age of two years. He gives two cases from his own practice in which children of ten and fifteen months respectively recovered; and strongly recommends that, in suitable cases, the youth of the patient should not be allowed to contraindicate operation. The following list of the successful cases known to M. Baizeau may be quoted as including a case performed not many years ago in the Royal Infirmary of Edinburgh, and reported in the pages of this journal:—

"M. Isambert has lately reported a case of recovery in an infant of sixteen months. M. Archambault one of thirteen and one of eighteen. M. Roger has reported the case of a little patient of nineteen months, also saved by tracheotomy. M. Vigla has had a recovery in a little boy of seventeen months. MM. Potain and Moutard-Martin have each operated with success on infants of eighteen months. I recall also the cures obtained by MM. Trousseau and Barthez on infants of thirteen months, and by Bell, of Edinburgh, in one of seven months. M. Sedillot operated on his own little girl at six weeks, but in her case there was doubt as to the disease being really croup. If tracheotomy does not offer the same chances of success in infants below two years as in those above that age, it cannot be contested that it does sometimes succeed. Let us hope that soon the facts cited will be no longer exceptions."—*Ed. Med. Journ.*, Nov. 1867, from *Gazette des Hôpitaux*, 1867, Nos. 77, 83, 89, 100.

40. *Ligature of the External Iliac Artery for Femoral Aneurism*.—This operation was performed by Mr. C. LEONARD, at the Bristol Royal Infirmary, February 5, 1867. The subject of the case was a tall, spare man, thirty years of age. The aneurism was caused by a severe strain, and first appeared about

a year previously. Compression was applied to the femoral artery, and continued at intervals for nearly three weeks, to promote collateral circulation.

Feb. 5. The patient being under the influence of chloroform, an incision four inches long was made in the right iliac region, commencing an inch and a half from the anterior superior spine of the ilium, and extending in a curved direction downwards and inwards, with the convexity downwards, to a little above the situation of the external abdominal ring; the tendon of the external oblique and the fibres of the internal oblique and transversalis muscles were divided on a director, the fascia transversalis opened, and the artery readily found, and tied about an inch and a half above its lower termination. The wound was closed with horsehair sutures, the limb wrapped in cotton wool, and hot water bottles were constantly applied to maintain the proper temperature.

He recovered slowly, but without any unfavourable symptoms, requiring opiates for the first few nights. He improved very rapidly in appearance and strength. The ligature came away on February 22, and the wound soon afterwards healed. One or two rather troublesome ulcers formed on the heel and ankle. The limb was bandaged from the foot upwards, making some pressure on the aneurism, which became flatter and softer and gradually smaller.

On the 10th of June the patient presented himself for inspection, looking stout and well, and was able to undergo regular labour. The abdominal parietes at the seat of operation were firm, and there was no tendency to protrusion.—*British Medical Journal*, Oct. 26, 1867.

41. *Elephantiasis of the Lower Extremity cured by Ligature of External Iliac Artery.*—Dr. GEO. BUCHANAN relates (*Brit. Med. Journ.*, Nov. 23, 1867) the case of a woman, aged 17, admitted to the Glasgow Royal Infirmary with elephantiasis of left lower extremity. The limb “was a huge misshapen mass, the natural prominences being obscured by the overgrowth, and the depressions of the flexures converted into deep sulci. The skin had a hard brawny feeling, and was covered with rough scales, while over the dorsum of the foot and toes the whole surface was studded with conical papillæ of scarf-skin, fully an eighth of an inch high. This gave the limb a very peculiar appearance which is not easy to describe. The contour of the foot was entirely lost, there being a deep sulcus in front of the ankle, and a rounded protruding mass between that and the toes. In fact, the term elephant’s leg defines the shape better than any written account could do. The measurement of the various parts of the limb were as follows: round the ankle, eighteen inches; calf, twenty-six inches; middle of thigh, twenty-three inches. Although the enlargement of the thigh was not so great as that of the leg, yet at the groin the skin and cellular tissue were so thick that the femoral artery could not be felt. The right leg was also in a state of incipient elephantiasis, presenting in a slight degree the characters described above. It measured round the ankle thirteen inches, calf sixteen inches and a half, thigh nineteen inches and a half. It should be mentioned that there was a general tendency to hypertrophy of the cellular tissue in every region, and over the abdomen the deposit was so copious that the iliac artery could with difficulty be detected. In all other respects the patient was in perfect health.

Dr. B. ordered patient to be kept in bed for two months with the limb elevated and bandaged; but at the end of this time there being no improvement, he ligated the external iliac artery December 21st, 1866. At the date of her dismissal the following were the measurements compared with those before the operation:—

	Round Ankle.	Calf.	Thigh.
Before operation	18	26	23
After, at dismissal	14½	17	20

But the diminution in size was not the only change produced by the operation. The hard, horny, scaly surface was changed into a soft elastic natural coloured substance, which had all the characters of healthy skin. The large horny looking projections of scarf-skin which covered the toes had fallen off, so that the dorsum of the foot and toes was quite smooth and soft. The patient could walk with comparative ease, and expressed herself as highly pleased with

the result. On comparing the two limbs, it was found that little difference existed between their size, except in the feet, the elephantine one still preserving its curious contour, though so much reduced in size.

42. *Extirpation of a Hypertrophied Spleen.*—The *Gazette Hebdomadaire de Médecine et de Chirurgie* for the 25th Oct. 1867, contains an account of a case of splenotomy performed by M. E. KœBERLÉ Sept. 21, 1867. The subject was a female 42 years of age, of good constitution. The spleen was enormously hypertrophied and weighed when removed seventeen and a half pounds. There were strong adhesions between the upper portion of the organ and the diaphragm which had to be separated before the spleen could be removed; this was done with great care, nevertheless numerous small vessels were thereby ruptured, which gave issue to much blood; it was found impossible to control this hemorrhage, and the patient sank from its effects. The main vessels of the organ had been well secured by ligatures before its ablation, and they were found in place at the *autopsy*.

M. Kœberlé gives a *résumé* of the six operations of this kind previously performed: viz., by Fantoni, Zacarelli, Quittenbaum, Kuchler, Spencer Wells, and Péan, in three of which the patients survived the operation, and three died.

43. *Ovariectomy.*—MR. THOMAS KEITH relates, in recent numbers of the *Ed. Medical Journal* (Nov. and Dec. 1867), fourteen cases of ovarian disease in which he performed ovariectomy; of these twelve patients recovered and two died.

44. *Fecal Fistula following Ovariectomy.*—MR. T. SPENCER WELLS gives some particulars of a case of this (*Glasgow Medical Journal*, Feb. 1868), the only one, he states, out of two hundred and forty-seven complete ovariectomies in which fecal fistula followed the operation in his practice. A full report of the case is given in his first volume on Diseases of the Ovaries. This case, Mr. Wells thinks, "tells against the practice of tying the pedicle of an ovarian tumour, whether the ends of the ligature are left hanging out between the lips of the wound, or are cut off short and returned. The formation of a sort of canal or sinus by the adhesion together of folds of omentum or coils of intestine, in such a manner as to inclose the ligature and shut it off from the general peritoneal cavity, occurs, I believe, very generally when the ends of the ligature are not cut off. If the patient recover, one might expect more or less obstruction of intestine to follow such adhesions; although I am not aware of any case where such obstruction has been actually proved. When the ends of the ligature are cut off and the pedicle returned, we know from repeated *post-mortem* examinations that a similar adhesion of neighbouring intestine takes place around the end of the pedicle; and that, in some cases, pus has been circumscribed in this manner—until at length it has found an outlet, either through the abdominal wall, the vagina, or intestine. The occasional observation of cases of this kind (when at distant intervals I have been driven to adopt one or other of the *intra-peritoneal* methods of dealing with the pedicle) has led me more and more to the conviction that the clamp, or some other *extra-peritoneal* method, is not only more successful as regards the immediate result of the operation, but even more so if we look to the subsequent health of the patient.

"Patients who recover after the *extra-peritoneal* treatment of the pedicle, as a rule, soon regain and maintain perfect health. So do many of those who recover after the *intra-peritoneal* treatment. But some of them, sooner or later, suffer from chronic suppuration, hæmatocele, or fecal fistula; or, perhaps without any definite local ailment, are many months before they become strong and well."

45. *Colloid Cancer of Colon; Attempted Colotomy; Constipation for Eighty-eight Days.*—MR. J. C. FORSTER communicated to the Royal Medical and Chirurgical Society (June 25, 1867) the following case of this:—

"A lady, aged 40, without children, was seized on September 3, 1866, with an attack of diarrhoea, which lasted ten days; her bowels became gradually confined

from this date, and pain occurred at intervals over the whole abdomen, more especially in the left iliac region. From October 10 to the day of her death the bowels were never relieved. There was tympanitis to a slight extent; she vomited occasionally; there was no great heat of skin; urine was rather scanty, but clear. Various remedies were tried; the long enema tube was passed about fourteen inches up the rectum, when it met with an obstruction, and the injection thrown in returned unchanged. The author saw her first on November 29, and found the abdomen by no means greatly distended; no hardness to be felt at any particular spot; occasional vomiting; an anxious countenance; a small thready pulse; a clean tongue; the extremities cold. No evacuation had taken place for fifty days, though she thought she passed a small quantity of flatus; nothing abnormal could be detected per rectum or vaginam. Colotomy was attempted; the colon was found flaccid and empty, lying deep in the wound. The incision was closed, and in four days the parts were perfectly healed. Opiates were again administered. The author saw this lady the second time on December 15, when she appeared much the same. A proposal was made to open the ascending colon, but it was not acceded to; and a suggestion was offered to explore the abdomen, to which the author would not consent, but tapped the distended intestines with a fine trocar and canula, with great temporary relief. No other remedies appeared available; she continued much the same, with slight sickness, and died exhausted on January 7, 1867, thirty-eight days after the attempted operation, and eighty-eight days from the date of the last evacuation. The post-mortem examination revealed colloid cancer of the descending and sigmoid flexure of the colon opposite the incision in the lumbar region; the rest of the large intestine was full of feces, as also a portion of the ilium; there were likewise traces of the disease in other parts of the abdomen. The author alluded to two interesting points in connection with the case, and offered some remarks upon them: 1. A possible source of difficulty in performing colotomy, which he believed with every care could not be foreseen; and 2. The extraordinary length of time during which constipation existed. Attention was also drawn to the method adopted to reach the colon—viz., by a longitudinal incision instead of a transverse. The variety of the cancer—viz., colloid—was alluded to, and also the mode of death.”—*Med. Times and Gaz.*, Sept. 28, 1867.

46. *Case of Strangulated Hernia in which the Symptoms continued after the Reduction of the Tumour.*—Prof. SYME reports (*Ed. Med. Journ.*, January, 1868) an interesting case of this. The subject of it was a strong man, with his abdomen much distended, but nothing perceptibly wrong in the groins. “He had experienced no relief from the return of the bowel, but, on the contrary, during the four following days had continued to suffer from sickness, with frequent vomiting and obstinate constipation. Under these circumstances, we concluded that the sac had been reduced along with its contents, and that the bowel being still in a state of strangulation, there was no time for delay in resorting to efficient means of relief.

“I therefore made a free incision over the right spermatic cord, and cut through its coverings so as to expose the external ring, into which I introduced my finger and pushed it up, until the lower surface of a bag could be felt. This was brought into view by dividing the aponeurosis of the external oblique muscle to a sufficient extent, and cautiously opened, as it contained no fluid, and merely a portion of intestine. At the neck of the sac there was a very tight stricture, through which a probe-pointed bistoury having been guided by my finger, free admission was afforded to the protruded bowel. There was no bleeding, and a couple of sutures closed the edges of the wound, which was covered by a compress, properly secured.

“No sooner had the operation been performed than the patient declared that he felt relieved. In less than half an hour afterwards the bowels were freely evacuated; and everything went on well, without any occurrence worthy of notice.”

Prof. S. also reproduces a similar, or even more remarkable case, published by him in the same *Journal* for January, 1850, which he trusts will afford en-

couragement to operate for the remedy of hernial tumours, reduced in a state of strangulation.

47. *Hedrocele*.—Hedrocele, from ἕδρα, anus, and πρῶτον, a tumour, is the protrusion of a hernial sac, with a coil of intestine, from the anus. Dr. Uhde relates a case of this rare affection, and gives the following description of its chief symptoms. A hedrocele is a spheroidal or cylindrical tumour, which resembles, at first sight, a prolapsus ani; it is of a red colour, and marked on its surface by mucous follicles and enlarged veins. When the affection has lasted for some time, the veins become distended and the mucous membrane œdematous. Partial gangrene sometimes attacks the swelling, and an orifice is occasionally formed at its anterior part, which opens into the recto-vesical or recto-uterine pouch. The tumour is very tense and resistant to the touch, particularly in front. This rectal hernia is sometimes strangulated; and very serious symptoms are presented similar to those of strangulation of an ordinary hernia. If the obstruction be not relieved, it may produce perforation, gangrene, fecal abscess, artificial anus, and, in some cases, even death. Strangulation of an hedrocele is distinguished from a similar condition of rectocele by being limited to a part of the tumour and not involving the whole of the prolapsed portion. The prognosis of this affection is unfavourable, from the irreducibility of the tumour and its liability to become strangulated. When reducible, an hedrocele may be relieved by rest, cold baths, and the introduction of a pessary by the anus. Dr. Uhde proposes to relieve strangulation by making two incisions through the skin and prolapsed rectum on each side of the hernia, and by incising, after the sac is exposed, the muscular ring which compresses the neck of the tumour.—*Brit. Med. Journ.*, Nov. 16, 1867, from *Langenback's Archiv*, 1867.

48. *Treatment of Gunshot Wounds of the Lungs*.—In the treatment of gunshot wounds of the lung, says Inspector-General MOUTAT (*Surgical History of the New Zealand Campaign*), bleeding has been very generally, if not altogether discarded. The inevitable result of a wound of the lung is pleurisy, and the effusion into the thoracic cavity is often so great as to destroy life by suffocation at an early period. In one of the cases, the effusion found its way through the opening of exit made by the bullet. This did not save the patient, but it gave him very great relief, and enabled him to prolong the struggle till the eighty-seventh day. It would seem to be a judicious proceeding to open the pleural cavity in order to afford exit to effused fluid as early as this can be detected. With this assistance, a very vigorous constitution may battle through the illness, which to a weaker man is almost certainly fatal. It is a matter of the first importance to fix the injured side of the chest. This is best and most easily effected by inclosing that side of the chest with broad strips of adhesive plaster, so as to prevent all motion of the ribs, leaving an opening opposite the wound or wounds. The beneficial results of this practice were shown in two very serious cases of this nature, in the campaign of 1860-61.—*Brit. Med. Journ.*, Nov. 16, 1867.

49. *Insect Stings Treated by Collodion*.—M. LATOUR insists greatly upon the value of impermeable coating of the skin as a means of combating inflammation. He insists upon this principle: that inflammation consists in the local exaggeration of organic heat; and that the action of the air on the skin is an element in that heat. Shave a rabbit, and cover it with collodion: it soon dies of cold. If one limb be coated, that limb only becomes cold. Even in the case of inflammations resulting from a morbid poison, smallpox pustules, furuncle, bites of insects, M. Latour (*Journal Pratique de Méd.*, Sept. 1867) is equally of opinion that it is necessary to arrest the exaggerated production of animal heat. M. Marchal (de Calvi), in his book on diabetes, describes fifteen cases of uric anthrax successfully treated by coating them with collodion. For insect bites, M. Latour considers and finds experimentally that the collodion coating is essentially serviceable.—*Brit. Med. Journ.*, Nov. 16, 1867.

50. *Spontaneous Fracture of Urinary Calculi in the Bladder*.—Mr. GEORGE SOUTHAM records (*Brit. Med. Journ.*, Jan. 4th, 1868), three cases of this rare occurrence, two of which came under his own notice, and the third under that of Mr. Luke.

OPHTHALMOLOGY.

51. *Exophthalmic Goitre*.—Dr. MORELL MACKENZIE communicated to the Clinical Society (Jan. 10, 1868) three cases of this disease in all of which the characteristic symptoms of the disease, palpitation of the heart and throbbing of the carotid arteries, were present. In one of them the signs of mitral regurgitation were present. One fatal case was complicated with epileptiform convulsions and maniacal paroxysms, which continued until death. A fourth case was referred to in which the cardiac and arterial symptoms were absent. One of the patients was exhibited. Dr. Mackenzie observed that in all the cases goitre preceded the other symptoms of the disease. He regarded it as most probable that the disease is dependent on lesions of the medulla oblongata, which, however, may exercise their influence through the vasomotor nervous system, and drew attention to the negative results of ophthalmoscopic examinations in his cases as compared with those obtained by Geigel.

Dr. GREENHOW differed from Dr. Mackenzie as regards the dependence of the exophthalmos on the bronchocele. In a female patient, aged thirty-five, in whom the disease was evidently induced by an emotional shock, and lasted for eight years, there was at first no goitre, although all the other symptoms were well-marked. This patient was successfully treated by chalybeates, completely recovering after being three or four years under observation. In this case, as in others, the weakness of the radial pulse contrasted with the violence of that of the carotid. There were frequent alternations of improvement and exacerbation, which had an evident relation to catamenial disorder.

Dr. C. J. B. WILLIAMS objected to the term exophthalmic goitre, as there is often no enlargement of the thyroid. He regarded the swelling of the thyroid and the projection of the eyeballs as a mere result of the enlargement of the arteries. In most instances iron, and especially the astringent preparations in large doses, appeared to be curative. These remedies should be combined with nutritious regimen and quiet.

52. *Normal Lens Extraction*.—Dr. ADOLPH WEBER regards the method of linear extraction of cataract as a great step in advance, as far as principle is concerned, on the method by flap extraction, he is yet of opinion that the sound principle is not at present thoroughly carried out. He wishes to combine an incision that shall not exceed a fourth of the circumference of the cornea, with a freedom of exit for the lens that shall render the use of traction instruments exceptional—as exceptional, to use his own phrase, as the use of forceps in labour. He aims also at a plan of section that shall reduce to a minimum the number of cases in which loss of vitreous occurs; and he seeks to leave the ciliary border of the iris intact. He thinks Von Graefe's section objectionable on account of its steepness, of the direction given to it by turning the edge of the knife forwards; and he sees in the complete iridectomy a frequent cause of complications that arise from tags of iris becoming entangled in and adherent to the angles of the wound.

As the result of various experiments, Dr. Weber arrives at the conclusion that the best section for a full-sized lens is one exactly in the margin of the cornea, and in the plane of the margin, of such dimensions that its angles shall be nine millimetres apart when its centre gaps to the extent of four millimetres. All operators know that the ordinary flat lance-knife cannot be kept in the corneal margin; and Dr. Weber has designed a modification of it by which this difficulty is overcome. His knife bears a general resemblance to the bent lance-knives commonly used for scoop extractions, but differs from them in several

points of detail. The triangular blade is bent at an angle of 120° to the shaft, and is 10.25 millimetres in length, so as to admit of being thrust home in an eye of which the cornea is twelve millimetres in diameter. The blade is ten millimetres broad at a distance of 6.5 millimetres from its point; retains the same breadth for two millimetres further back, so as to render the external and internal corneal wounds equal in length; and then diminishes to the shaft, so as to facilitate withdrawal. The blade thus bears some resemblance in shape to the heart on playing-cards. It is also concave from side to side, the concavity looking backwards, and the curve having a radius of 10.719 millimetres. With such a knife Dr. Weber states that it is possible to make an incision that shall be in the same plane as, and wholly coincident with, the margin of the cornea. He chooses the lower, or lower and internal part of the circumference, draws out the iris with a hook and cuts off a little of the pupillary margin only, lacerates the capsule with great care and nicety, and then, by pressing back the posterior lip of the wound with the flat of a scoop, and by making a little counter-pressure, at a point opposite the centre of the incision, with the forceps by which the globe is held, he finds that the lens usually glides out with great facility.—*Lancet*, Jan. 11, 1868, from *Archiv für Ophthalmologie*.

53. *Epidemic Ophthalmic Disease*.—Sir W. R. WILDE describes (*Medical Times and Gaz.*, Feb. 1, 1868), a hitherto undescribed epidemic which has recently prevailed in Ireland.

"The subjects were generally girls, and from one month to five or six years of age. The disease in most instances commenced with fever of considerable violence, frequently accompanied by a measly eruption of about two days' duration. In some instances there was also a special redness and swelling of the joints, particularly the elbows, knees, and ankles, like what is seen in diffuse inflammation, or what gives a suspicion of blood poisoning, or in rapid cases of malignant scarlatina.

"After a day or two one eye became affected, and then the general symptoms usually mitigated. The ocular symptoms were: General but slight vascularity of the conjunctiva, but no chemosis or purulent discharge beyond what occurs in catarrhal ophthalmia; zonular redness of the sclerotic vessels round the cornea, and some slight pain and intolerance of light. I have, however, seen cases in which there was scarcely any redness of the tunica albuginea. The eyelids were but very slightly affected; globe very tense, and apparently enlarged.

"The cornea first showed symptoms. In some cases it commenced with superficial ulceration, but in most of the instances that came under my observation in the early stage, it suddenly became gray, as in subacute corneitis in weakly subjects. At the same time the iris advanced towards the cornea, when it was found to have rapidly changed its colour to a greenish brown, showing intense internal inflammatory action, probably extending in the choroid likewise, and in all probability commencing in the interior of the eye.

"In nearly every case the anterior chamber became full of lymph in a few hours, and lymph was also effused on the external surface of the cornea, as in cases of diphtheria; and, as in all such cases occurring on the surface of the eye, presented a raised line where the eyelids met below the central axis of the globe. The symptoms subsided slowly; the cornea did not slough or burst except in one case that came under my notice, but I have not seen as yet a single recovery.

"In only one case have I seen the second eye affected, and that was in a twin child of three months old. In those cases that I have had an opportunity of examining subsequent to the inflammatory attack, the majority presented a softened and partially collapsed globe, discoloured iris, partial or complete adhesion of pupil to lens, which was a dirty yellow colour. I have been well acquainted for many years with the local disease described above, both as occurring in infants in the form that I have mentioned, and in children from five to twelve years of age, as in diphtheritic affection of the eye, in which I have sometimes been able to draw off with a forceps from the anterior surface of the cornea a layer of lymph, but I have never known it to assume an epidemic form until the present."

54. *Rarity of Severe Cases of Granular Lids in English Practice.*—The following statement will excite surprise in this country, where severe cases of granular lids are of such frequent occurrence.

"It is a matter of frequent remark from foreign visitors to Moorfields that cases of trachoma are very much less frequent than at other ophthalmic institutions. Amongst Mr. Hutchinson's patients during the last six months there have not been more than half a dozen such cases of any great severity. On December 12 the cases were counted; and, out of fifty patients, only two were attending for granular lids. Of these, one was an Australian case, originally severe, but now nearly well, and the other a mild case in a young child.

"Most of the more severe cases are either in Irish persons or in those who have lived abroad—Egypt, Australia, etc.

"The practice at present pursued at this hospital of applying rather strong solutions of nitrate of silver (twenty grains to the ounce) appears to be very successful. Mr. Hutchinson frequently uses in addition drops of chloride of zinc (two grains to the ounce)."—*Med. Times and Gaz.*, Dec. 21, 1867.

55. *Treatment of Opacities of the Cornea.*—The following are the conclusions of a memoir presented to the Academy of Sciences, Sept. 23, 1867. By Dr. RAPHAEL CASTORANI:—

1. The cornea reproduces itself.
2. Wounds and ulcers of the cornea are cured without opacity by the action of stimulants, which while they promote the reproduction of the cornea, also modify the secretion of the conjunctiva.
3. To cure opacities of the cornea, they must be transformed into wounds or ulcers, and then treated like the latter.
4. Opacities may be transformed into wounds or ulcers by means of an operation, or by a collyrium of iodide of potassium.
5. The action of the saturated solution of iodide of potassium appears to be caustic, dissolvent, and astringent.—*Gaz. Méd. de Paris*, Oct. 26, 1867.

MIDWIFERY.

56. *Labour in Shoulder-Presentation.*—In an admirable memoir on shoulder-presentation LAZZARI illustrates the following propositions: That, wheresoever possible, attempt should be made to correct this presentation, *i.e.*, to restore the head, as rendering spontaneous delivery possible. That corrections may be attempted with prospect of success, either during the end of gestation or at the beginning of labour, by external compression or manipulations when the head of the fœtus is to be brought over the inferior segment of the uterus. That in labour somewhat advanced, or when attempt at correction fails, it is better to bring down the nates practising turning by the feet. That nature sometimes completes labour by the shoulder by herself, the modes being, (a) spontaneous cephalic and podalic version; (b) spontaneous cephalic and podalic evolution. That spontaneous version by the feet is a true natural substitution of the pelvic region for that of the shoulder, brought about whilst the fœtus is still entirely in the uterine cavity, and above the brim of the pelvis. That spontaneous evolution is the true natural labour by the shoulder, which is accomplished, things being favourable, under the laws and mechanism governing the passage of all other parts through the pelvic canal. That as to spontaneous version we may substitute artificial version by the feet whilst the fœtus is free, so when the shoulder has descended deeply into the cavity, if spontaneous evolution cannot be effected, labour may be completed by artificial evolution. That artificial evolution is always fatal to the child, and somewhat dangerous to the mother.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1868, from *Annali Universali di Med.*, Milan, Oct. 1867.

57. *Case of Triplets, two blighted at different periods, the third fully developed.*—Dr. INGLIS showed to the Edinburgh Obstetrical Society, 11th Dec., 1867, a large piece of membrane containing two placenta—one apparently a six-month one, and the other a four-month one—which had been expelled after the birth of an ordinary full-sized child and placenta. A six-month foetus, very much decomposed, was attached by a cord to the larger placenta, but no trace of any foetus could be discovered in connection with the smaller one. Dr. Inglis considered that the patient had become pregnant of triplets; that one had become blighted in the early months, and no trace of it remained save the placenta, which had increased in size to a certain extent; the second foetus had died about the sixth month, but was not expelled; while the third had gone on to the full time, and was born alive and healthy.—*Edinburgh Med. Journ.*, Feb. 1868.

58. *Conception with Dropsical Amnion; Difficulty in Diagnosis.*—Dr. GREENHALGH narrated to the Medical Society of London (Nov. 4, 1867) the case of a patient who had been married eleven years, and she was then five and a half months advanced in her eighth pregnancy. She stated that after her last confinement, in January last, her abdomen did not decrease in size, as in previous labours, and that at the fourth month of her pregnancy she could scarcely move about, and could not lie down. On examination on October 23, the abdomen was found very prominent, and numerous veins were noticed beneath the integument. Fluctuation was well marked in every direction, but at the right iliac fossa there was a doughy, non-fluctuating swelling. The vagina was short and lax, and the os uteri fairly dilated. No ballottement could be detected. Was the case one of ovarian dropsy complicating utero-gestation, or was it conception with dropsy of the amnion? Should she be tapped, or should labour, which was somewhat advanced, be expedited? The latter course was agreed upon. After the administration of ergot, pains came on, which were followed by rupture of a dropsical amnion. Dr. Greenhalgh pointed out the extreme difficulty—nay, the impossibility—of arriving at a certain diagnosis in such cases, and the hazards incurred by those practitioners who recommend tapping a fluctuating abdomen during pregnancy.—*Med. Times and Gaz.*, Nov. 9, 1867.

59. *Treatment of Prolapsed Funis.*—Dr. K. F. I. BIRNBAUM gives an historical *résumé* of the plan of replacing the cord by putting the woman in the knee-elbow position. He quotes Deventer, 1701; John Mowbray, 1724; Henry Bracken, 1737, and others, as having recommended this practice; and more lately V. Ritgen (1848). As a pupil of Ritgen's, B. says he has often practised this method. He says—When a loop of funis is still high in the cervical canal, and the cervix scarcely admits the examining finger, it may be that the knee and elbow position is useful; but when the loop has once passed through the os uteri, whether head, trunk, or foot present, it will be vain to expect any good from this position. He remembers no case where manual aid was not also necessary, in addition to the knee-elbow or side position to replace the cord, or to extract the child.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1868, from *Mon. f. Geburtsk.*, Oct. 1867.

60. *Traumatic Aneurism of the Uterine Artery.*—Dr. GRAILY HEWITT exhibited to the Obstetrical Society of London (Dec. 4, 1867) a specimen of this very unusual lesion. The subject of it was aged thirty-seven, and the mother of several children. She was delivered by means of the forceps, and for the first few days appeared perfectly well. On or about the fourth day after labour, her husband came home drunk, and it is stated that he knelt upon her as she lay in bed. No immediately bad effects followed, but, thirteen days after labour, a slight flooding occurred. Inflammatory action on the right side of the abdomen became evident. Twenty days after labour, a second violent flooding took place, from which she nearly died. Thirty-one days after labour large quantities of yellowish matter escaped per vaginam. On the thirty-fourth day a third violent flooding came on; and on the thirty-seventh day there occurred again a

fourth and final violent hemorrhage, from the effects of which she could not be rallied. The parts exhibited consist of the uterus and neighbouring structures. The uterus is large, os patent, a small clot within it. At the junction of the cervix and body are two depressions, one on each side; on the left side there projected into the uterus from the pouch in question a rounded mass half an inch in diameter. By the side of this projecting mass a probe freely passed through the pouch into the interior of a large abscess, which reached from the broad ligament to the kidney. The little mass was hollow, contained a small clot of blood, and was perforated at one part of its surface. It was found, on further dissection, to be an aneurismal dilatation connected directly with the uterine artery, which opened freely into it. The sac itself was composed of layers of fibrin. It is evident that the uterus had been bruised, and probably actually lacerated, by the pressure employed against the projecting pelvic brim behind, the organ being at the time of the injury still of considerable size. The perforation of the uterine wall, and the abscess, were secondary effects; the aneurismal enlargement showed that the uterine artery had been injured, and the source of the repeated hemorrhages from the uterus was the enlargement in question. The case appears to be unique.—*Med. Times and Gaz.*, Jan. 18, 1868.

61. *Puerperal Fever, or Puerperal Pyæmia, after an Abortion.*—Dr. SNOW BECK read before the Obstetrical Society of London (Dec. 4th, 1867), a case in which abortion was induced at the end of the fourth month, in a healthy young lady, aged twenty-six. After a short time the symptoms observed were dirty and muddy complexion, great weakness, intense thirst, constant retching, cold perspirations, extremely rapid pulse, mind clear, though wandering sometimes, and much irritability. She died on the sixth day after the abortion. The post-mortem examination showed the uterus large and flabby, a portion of placenta imbued with purulent fluid, adherent to the uterus, and attached to it a considerable amount of coagulated blood; purulent fluid in the uterine sinuses, which were otherwise healthy, but so patent as to admit of fluid being injected through them; peritoneum not injected, though the pelvic portion was covered by a thin layer of soft lymph, and there was effusion of brownish serosity into the cavity; lobular congestion of the lungs; effusion of serum into the pleuræ, with soft lymph on the surface; small collections of similar exudation beneath the pleura. The minute structure of the internal surface of the uterus was fully detailed, and the relations of the placenta found to accord with the descriptions of the Hunters and others. The case appeared clearly to show the purulent infection of the general system through the pervious state of the uterine sinuses; also, that one of the most fatal forms of puerperal fever arose from this cause; the sinuses being pervious in consequence of a want of permanent contraction of the uterus. The statement of Dr. Barnes that he had repeatedly seen puerperal fever after perfect contraction of the uterus was examined, and the cases related by him were considered by the author to be diseases very different from puerperal fever—viz., Bright's disease, obstruction of the gall-duct, acute atrophy of the liver, scarlatina, and phlegmasia dolens. Lying-in women, when exposed to the infection of zymotic diseases, frequently took those diseases, but their essential characters remained unchanged. They often existed epidemically, and were infectious, and hence arose the assumed epidemic character and infectious nature of puerperal fever. In the treatment it was considered of much importance to prevent the purulent infection by effecting a firm and permanent contraction of the uterus; when it had occurred, to cleanse out the uterine cavity, and give the sulphites. The large administration of brandy and the application of a tight bandage were prejudicial, and the latter impossible, from the tenderness of the abdomen and uterus.

After some remarks from Dr. Tyler Smith, the following letter from Dr. BARNES, who was unavoidably absent, was read: "I am confident that contraction of the uterus, although a very desirable object to attain, is not a security against puerperal fever. I wish also to observe that Dr. Beck bases his criticisms upon five cases referred to in my lectures, as if these cases embodied my complete views upon puerperal fever. The lectures were broken off for want of time. I had of

course a great deal to say about septicæmic or pyæmic puerperal fever arising in the patient's own system. I maintain that the division I propose in those lectures on puerperal fever into excretory, uræmic, chokemic, scarlatinal, septicæmic, etc., is of great clinical value. For example, a lying-in woman is taken with fever. It is very difficult, sometimes impossible, at first, to tell whether that fever is really of epidemic origin, as scarlatinal, or whether it be strictly of puerperal origin. The puerperal state will impress its stamp upon any kind of fever, no matter whence obtained. Therefore it is a sound clinical proceeding to regard every fever in a lying-in woman as puerperal fever first; then to endeavour to analyze the symptoms with a view to discover the peculiar or special nature of that fever. To say that true puerperal fever is not contagious is to refuse to believe in one of the best-attested facts in medicine."

Dr. Playfair said that he was in the position to relate a fact connected with puerperal fever which seemed to him to be of itself sufficient to negative Dr. Beck's theory that zymotic diseases were not modified by the puerperal state. Some years ago a lying-in ward had been established at King's College Hospital. The utmost care had been taken in the construction and management of the ward, but in spite of every precaution the mortality had been for the last year or two excessively high. About a month ago numerous cases of erysipelas appeared in the surgical wards, and immediately afterwards the two most recently confined women were attacked with a very adynamic form of puerperal fever, which proved fatal in both instances. There could be no doubt that the cause of the disease was the same as that which was producing erysipelas in the surgical wards. There was, however, no trace of erysipelas as such in the puerperal cases, and the natural inference was that the action of the poison was modified by the state of the patients. He was happy to state that the authorities of the hospital had now determined to close the ward altogether. Doubtless a relaxed condition of the uterus was, as Dr. Beck maintained, a strong predisposing cause of puerperal fever; but he believed it would be a most false and dangerous conclusion if we were to generalize from this fact, and overlook the other and well-established modes by which puerperal fever was produced.

The President, Dr. HALL DAVIS, agreed with the author in his view of the pathology of the case which he had brought before the Society. It was one of puerperal septicæmia due to the absorption into the blood of putrid matter from the uterus. But while admitting that perfect contraction of the uterus was most important, he could not consider the want of it as more than an occasional element in producing puerperal fever, which had many other sources. He was of opinion that cases of sporadic peritonitis should not be tabulated with cases of puerperal fever, as the former arose from ordinary causes of inflammation, while puerperal fever, whether accompanied or not by peritonitis, arose from the introduction of poison into the blood, either by the veins or the uterus, or by the lung in inspiration. Contrary to the author, he was a strict believer in the contagion of puerperal fever immediately from patient to patient, and mediately through a third person. He was also convinced that other fevers, as typhus, scarlet fever, measles, and the emanations from hospital gangrene, had been prolific causes of puerperal fever. The taint conveyed from post-mortem examinations was another source of puerperal fever. This was well-illustrated by the statistics of the Vienna Lying-in Hospital, where at one time, when the students passed directly from their dissections to the lying-in women, the mortality, was 1 in every 10 deliveries. When this arrangement was changed, the percentage of deaths fell to 1 in 74. Lying-in hospitals are no doubt a boon to poor women without homes, but one greatly mitigated by the fact that the mortality in them from all causes is rarely less than 1 in 90 or 100, and generally greater. The institution of cottage hospitals would no doubt greatly lessen that mortality, and he hoped some day to see them established. Out-door institutions giving home attendance, such as the Royal Maternity Charity, presented a much smaller mortality. In that Charity only 1 death in 350 deliveries occurred. In conclusion, he could add, from long experience, his testimony to the great value of disinfecting injections of a proper temperature, timely resorted to, in preventing and arresting at its outset septicæmia of uterine origin in cases of putrescent lochia. But they came too late when delirium and other formidable symptoms had supervened.—*Med. Times and Gaz.*, Feb. 22, 1868.

62. *Puerperal Temperature.*—Mr. SQUIRE, in a paper read before the Obstetrical Society of London (July 3d, 1867), remarked that it was to the careful study of the natural history of disease, that medical science owed much of its recent progress, and that some of its surest advances had been guided by the systematic use of the thermometer in marking the variations of bodily temperature. The study of such variations, as illustrative of the changes that take place in pregnancy, in parturition, and in the puerperal state, was the subject of the present paper. In the latter months of pregnancy the temperature of the body is somewhat increased, and, after the sixth month, it will generally be found to be somewhat over 99° , subject to a slight variation in different persons, and in the same person under different conditions. In the unimpregnated condition much greater oscillations of temperature occur in connection with the catamenial period than at any time during pregnancy. Thus on the occurrence of the catamenia there is a considerable fall in temperature, and a variable rise shortly before, the temperature having been raised as much as one degree and one degree and a half in some cases just before the period; and in one case a fall of two degrees and a half took place within the first two days after its appearance. The difference between the vaginal and axillary temperatures will seldom be more than one-third of a degree, and frequently only one-fifth or one-tenth; if in the latter situation, all the requisite precautions to secure accuracy are observed. In this way 98.45° was obtained as the normal temperature in the axilla, and 98.75° in the vagina, when there were no disturbing circumstances. In three of the twelve cases taken for analysis in the present paper, where the comparison was made with the view of obviating some of the sources of error that might arise in investigations of this kind, the following results were obtained: In one case where, on the second day from delivery, the axillary temperature was 98.3° , some pain being complained of from slight perineal fissure, the local temperature was found to be only 98.5° . The next day there was a sudden rise in the axillary temperature to 103.3° , with much fulness and heat of the breasts; and although the perineal tenderness had disappeared, the temperature there was 103.7° . In the second case of perineal fissure, the cicatrization of which was complete on the ninth day, the temperatures were 98.2° and 98.3° respectively. In a third case, in which this comparison was made five hours after delivery, the temperatures were 99.2° and 99.4° respectively. The observations of puerperal temperature, except in these special instances, are all taken as in ordinary illness, by placing the bulb of the thermometer in the axilla, care being taken to secure its contact with both surfaces of the skin, to maintain this contact perfectly for a sufficient time (which should not be less than three minutes), and to guard against loss of heat by evaporation from the surface or through insufficient covering. There is not only no difficulty, but considerable convenience, in carrying out this method of noting progress during the lying-in state; the time occupied in other necessary inquiries suffices for obtaining these indications, which, when satisfactory, save further trouble and anxiety, or, on the other hand, give timely warning that precautions are needed. The commotion and efforts of parturition itself, while confined within the limits of natural labour, cause but a slight elevation of temperature, however great the sensation of heat may be either to the patient or the observer; indeed, in the axilla the thermometer will seldom reach its usual height. In the cases examined, the highest reading of a thermometer used in the ordinary digital examination was 99.9° ; the lowest series in any case had only a range from 98.9° to 99.1° . In four cases the temperature was above 99° five or six hours after delivery, and in one case it was 99.5° twelve hours after delivery. The elevation of temperature thus occasioned immediately after delivery has invariably experienced a continuous decline; and in most cases, if not in all, the temperature has not only descended to the normal line, but in some cases has gone considerably below it. This subsidence always takes place in the first twenty-four hours; it may be complete in twelve hours, or it may be prolonged into the second day. The lowest point reached in any case was 98.6° . The most constant and obvious disturbance of temperature in all the cases investigated is the rise which ushers in and accompanies the formation of milk. The commencement of this reaction is most regular, and it attains a certain prominence

forty-eight hours after the birth of the child. When the secretion of milk is readily established, the temperature again undergoes a fall as sudden as the rise, which seems necessary to its formation. The period of this subsidence is most variable, and the aberrations which the line of temperature presents before it finally falls into the normal line fully warrant the care and attention at this time traditionally conceded. Of the twelve cases tabulated, three were primiparæ; in three chloroform was given; three were in every respect normal; and three were complicated: the complications being, in one case, convulsions before delivery; in another, breech presentation; and in the third, a cross presentation necessitating version, and this case was also one of twins. In one case lactation was avoided; all the others suckled their children during the whole time they were under observation. The highest temperature reached was 104.3° on the tenth day; on the thirteenth day it fell three degrees, and soon became normal. In this case there was healthy action of kidneys, skin, and bowels, and the secretion of milk was abundant. In two other cases, until the fifteenth day the temperature continued somewhat above the normal line; in all the other cases it had become steady at this line before the ninth day, and in some in which this line had been reached on the third or fourth day there was a tendency to undue depression. In the patient who did not suckle, the first rise in temperature was less sudden and the subsidence more gradual, and it was not at any time so high as in the other cases. To obviate sources of error due to diurnal variations of temperature, observations were taken in the majority of cases between nine and ten o'clock, both morning and evening, until the fifth day; at noon on many of these days, and in the afternoon on subsequent days. These all show a steady progression in the direction indicated; and although an oscillation is shown daily, or on alternate days in some of the higher temperatures, it is not until the puerperal state is nearly over, and convalescence well advanced, that the ordinary diurnal variations again become evident. In reviewing the influence of sleep, food, stimulants, and medicine, on the thermometric phenomena presented by the cases examined, it would seem that the first subsidence of temperature is chiefly favoured by sleep; that in this way the time of delivery, if happening in the later hours of the day, had an influence; that it followed sooner upon a labour of some duration than upon the more rapid, and also where there had been a slight hemorrhage and no coagula remained. That during the period of low temperature, aid is best afforded by sleep, solid food, and warm diluents, and not by alcoholic stimulants. That aperients are not advisable in the first forty-eight hours of the delivery, as, during that period, they tend to check the formation of milk, and consequently delay the lowering of temperature; their action is more serviceable in the complications than in the ordinary requirements of the puerperal state. The disturbance of the pelvic viscera during parturition interferes with the natural action of the bowels, so that enemata are required, especially in those cases where solid food was freely taken from the first. That the judicious use of alcoholic stimulants has a most marked influence during the puerperal state. In the relations of this to the indications of the thermometer, three rules are provisionally offered. 1. That while the temperature continues high, and the secretion of milk is not fully established, stimulants may be useful and even necessary. 2. That when the secretion of milk is free, and the temperature still high, stimulants are unnecessary and may be injurious. 3. That when the temperature has fallen, and the secretion of milk is free, stimulants are safe and necessary adjuncts to food. Practically this last conclusion alone is of considerable convenience, and, when these conditions occur, the patient can generally be left with safety. In none of the cases were alcoholic stimulants given during the first three days, and in the case where suckling was not attempted, they were abstained from altogether. The conclusions which may fairly be deduced from the facts here given are—1st. That natural labour is not attended by any great exaltation of the temperature of the body. 2d. That after labour there is always a fall in temperature. 3d. That there is a subsequent rise in temperature, which has for its natural termination the secretion of milk. 4th. That observations of this kind are desirable as illustrative of the principles that should guide us in the management of the puerperal state.—*Med. Times and Gaz.*, Sept. 28, 1867.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Supplement to the Paper on Amputation at the Knee-Joint and at the Knee. By JOHN H. BRINTON, M. D.

Since my article in this number was printed off, an elaborate essay on the same subject, from the pen of Dr. Markoe, of New York, has appeared in the *New York Medical Journal* for March, 1868. In this paper Dr. Markoe reports fifty-one amputations at the knee-joint, thirty-one of which were performed at the New York Hospital, and the remainder in other hospitals and in private practice. Of the fifty-one cases, twenty-two died, a mortality of a little over forty-three per cent. Thirty-eight amputations were performed for injury; of these twenty-seven were apparently primary in their character, with fourteen deaths; and eleven were secondary, with six deaths. Dr. Markoe also refers to four successful amputations performed by Dr. Tewksbury, of Portland, Maine, which had been reported to him verbally.

If the results of these cases collected by Dr. Markoe be appended to the writer's synopsis of American cases, exhibited at page 332 of the present number of this Journal, the general mortality rate therein stated will be somewhat modified, as will be apparent from the following tables. Cases 1 and 46 of Dr. Markoe's report having been included in our previous tabulations are omitted in this reference.

Table showing the Results of American Amputations at the Knee-Joint.

	Cases.	Reco- veries.	Deaths.	Per cent. of mortality.
Primary amputations after accident . .	50	28	22	44.
Secondary amputations after accident . .	31	18	13	42.
Secondary amputations for disease . . .	30	25	5	16.66
Cause and period of amputation undetermined	6	6		
Total	117	77	40	34.19

Table showing the Results in the aggregate of American and Foreign Amputations at the Knee-Joint.

	Cases.	Reco- veries.	Deaths.	Per cent. of mortality
Primary amputations after accident . .	59	34	25	42.37
Secondary amputations after accident . .	37	23	14	37.83
Secondary amputations for disease . . .	62	48	14	22.58
Cause and period of amputation undetermined	6	6		
Total	164	111	53	32.31

Stricture of the Urethra; Retention of Urine; Rupture of the Urethra by the Patient attempting to introduce a Bougie; Recto-Vesical Puncture; Sloughing of nearly the whole integument of the Abdomen and Penis and of two-thirds of the Scrotum; Perineal Section; Variola; Pyæmia; Recovery. By ALBERT L. GIBON, M. D., Surgeon U. S. Navy.

Private C. T., U. S. Marine Corps, æt. 34, was admitted, early in January, 1867, into the hospital at the navy yard, near Portsmouth, N. H., with stricture of the urethra, which had been about a year forming and had recently become so much aggravated that for the preceding fortnight he had urinated only by drops. On admission he stated that about five years before, he had had gonorrhœa, which had not been followed by any sequelæ, and two years afterwards while serving in the army he had a second attack, which affected him severely four months, and did not entirely cease running until two months later. Some six months subsequent to this, he experienced the first very slight obstruction to the flow of urine, which, however, only became apparent after he had gotten wet or had drunk to excess. These attacks became more frequent, the stream gradually diminishing in size until it ceased altogether, the urine being voided only in drops, by great effort, attended with pain.

When admitted into the hospital, he was found to have a stricture at the bulb, which would not permit the passage of a No. 1 bougie. The urethra was excessively sensitive and intolerant of the presence of the instrument. There was considerable irritation about the neck of the bladder. The patient was cachectic and debilitated, from previous hard service in the army, and had been still further reduced by exposure, while on guard during the very severe weather of the month of January at this post, and by recent indulgence in drinking and, probably, sexual intercourse, while on liberty. He was ordered to be kept at rest in a warm room, allowed invigorating diet, and directed to make cold applications to the genitals and perineum.

He had already improved considerably, when, a few days after his admission, he obtained leave to absent himself an hour from the hospital; but he went out insufficiently clad, and, as was afterwards discovered, wandered about in the snow and drank several glasses of ale and hot gin toddy. He returned after having been absent nearly all day, and felt so badly that he immediately went to bed, but made no especial complaint to the attendants. The following day he urinated with somewhat more difficulty than during the preceding week.

January 19. He complained to me, this morning, of excessive ardor urinæ and of severe persistent burning pain in the penis, which was somewhat swollen. His pulse was accelerated; he had occasional rigors; voided during the day forty ounces of urine. Ordered opium in large doses, and applied ice-bags to the pubis and perineum.

20th. Scrotum and penis much swollen, distension extending into the perineum and left groin. The pain had been relieved by the ice-bags, and about twenty ounces of urine had dribbled away and been collected; perhaps as much more was lost. Removed the ice-bags, which kept him shivering, and made numerous deep incisions into the swollen parts, which gave discharge to a serous fluid having no urinous smell, and affording great relief. Applied warm flannel fomentations and administered opiate enemata.

21st. Scrotum, penis, and perineum enormously distended and very much discoloured; lower part of the abdomen had also become swollen within a few hours. Urine had constantly dribbled away until eight o'clock this morning, when it entirely ceased. The patient was in a state of great alarm;

his features pinched and haggard ; pulse small, thread-like, and too rapid to be counted ; breathing hurried and shallow. I at first intended to discharge the bladder by perineal section, but on making an incision into the perineum two inches deep, found such obliteration of structure that I was apprehensive of missing the urethra, and concluded that it would be more certain and expeditious to perform the recto-vesical puncture, and accordingly tapped the bladder through the rectum close to the edge of the prostate, and discharged a very large quantity of dark, turbid, highly ammoniacal urine. Made numerous deep incisions into the swollen parts and cut the prepuce, which was strangulating the glans. Applied warm anodyne fomentations to all the affected parts, and ordered wine whey, beef-tea, and opium.

22d. Plugged the cannula and emptied the bladder every three hours. There was no discharge from the numerous incisions, which gaped open and were filled with brownish arcolar tissue. There had been no subsidence of the swelling of the abdomen, scrotum, penis, and perineum, which were all cold and discoloured. Pulse averaged one hundred and sixty, feeble and very small ; with extreme prostration, restlessness, unconsciousness, and dry brown tongue. Gave essence of beef, milk-punch, whiskey, etc., alternately every hour.

23d. All the discoloured parts sloughing. Condition generally the same as yesterday, except that he is conscious and able to talk. Complains of deep-seated acute pain when pressure is applied to the abdomen. On being questioned closely, confessed that on the 16th instant, while out of the hospital, he had wandered about several hours in the snow, with some friends, drinking hot gin toddies, etc. ; that he was so exhausted on his return, that he immediately went to bed and suffered so much during the night from inability to satisfy his desire to urinate that he attempted to force a bougie through the obstruction, using the only one he could find, a No. 6 flexible metal instrument. After persisting in his attempt almost an hour, the obstruction seemed to give way, and he felt the point of the instrument on the left side of the scrotum near the testis. Passed a large quantity of blood, but experienced such agony from the distended bladder that he was not sensible of much pain at the site of injury, and did not think he had hurt himself seriously. Towards morning, felt relieved, the urine having escaped drop by drop, during the night.

25th. Removed a large slough from the scrotum, involving two-thirds of its superficies, completely enucleating the left testis and exposing a considerable portion of the spermatic cord. On the right side, the sloughing was not so deep. Urine now escaping quite fast outside of the cannula, which is irritating the bladder. Pulse 160 ; somewhat harder, wiry ; expression anxious ; delirium ; jactitation ; retching, etc. Continued the administration of stimuli.

26th. Detached a slough involving the whole sheath of the penis, excepting a small portion on the dorsum of the organ ; thin, dark, offensive matter pouring out from the denuded surfaces. The extremity of the cannula was causing so much irritation of the anterior wall of the bladder, and urine escaped so freely outside of the instrument, that I determined to remove it ; and if the fistula closed, open the urethra through the perineum, the distension of which was rapidly abating. Administered a mild enema, which brought away a large quantity of hardened feces and urine. Pulse small, quick, wiry ; skin hot and dry ; tongue hard, dry, and brown ; features pinched, etc.

27th. Discovered a large abscess which had formed over the fifth and sixth ribs on the right side. Observed an eruption of numerous papules over the thorax and above the umbilicus. Lifted off a number of detached pieces of slough from the abdomen, which was tumid and discoloured up to the umbilicus. Profuse discharge of thin, fetid, purulent matter from all the parts which have been destroyed by sloughing. Filled the cavities left by the removal of the sloughs with rolls of charpie moistened with liquor sodæ chlorinatæ, which were removed as they became saturated. Passed very little urine per anum, and complained of much tenderness over the pubis. Kept up the exhibition of stimuli, and repeated the enema, which discharged a mass of feces and a quantity of urine.

28th. Patient very low; pulse 140, small, hard; skin dry and burning; mind wandering; restless, etc. Opened the urethra by perineal section, discharging a large accumulation of urine. Papillæ having the appearance of variola very numerous on the body, and scattered less thickly over the head and neck.

29th. Removed an immense mass of slough from the abdomen, exposing a space extending from the middle of the eighth rib of the right side obliquely across the body, immediately below the umbilicus, to the extremity of the left floating rib, down to both iliac crests, and, following Poupart's ligaments, to the pubis, showing the white fibres of the muscular aponeuroses beneath; the whole of this surface, as well as that of the denuded penis and scrotum, discharging thin, dark, offensive pus; great constitutional disturbance; small abscesses on both legs.

30th. Opened a large abscess below Poupart's ligament on the left side; thin, offensive matter pouring out from every part of the sloughing surface; urine passing freely through the perineum; none through the rectum.

February 1. Has well-marked variola, of which there are two cases in another ward of the hospital; pustules large, umbilicated, distinct, numerous on the thorax and extremities, but not many on the head, face, and neck; urine freely voided by perineum.

2d. The extensive suppurating surfaces discharging pus of a lighter colour than heretofore, which requires to be continually swabbed out of the cavities. Sinuses extend up towards the ribs of the left side, below the left Poupart's ligament, and along both cords into the scrotum, and thence into the perineum. Has frequent rigors; pulse quick, corded, somewhat larger; tongue hard, dry, and cracked in the centre, softer on the edges; delirious. Continued stimulation by brandy, quinia, essence of beef, etc., night and day.

4th. A broad and painful ulcer formed over the sacrum and coccyx; pulse 120, fuller; tongue cleaning.

5th. Variolous eruption desquamating; purulent discharge much thicker, more scanty, and of yellowish colour; ulcers granulating. Kept the cavities and sinuses stuffed with charpie, and where local stimulation was required, as around the body of the penis, saturated the dressing with equal parts of copaiba and glycerin.

7th. Granulation proceeding rapidly; left testis covered with granulations, which are also springing up towards it from the bottom of the scrotal ulcer; pulse ninety, softer, fuller; tongue quite clean; able to have his head raised and to watch the dressing of his sores. Urine has been freely voided through the perineum, and to-day began to trickle from the orifice of the urethra.

8th. Pulse 82; much less purulent discharge; very much emaciated; appetite ravenous.

9th. A bougie introduced at the orifice of the urethra emerged at the perineal opening. From the latter site, traced a number of sinuous passages, terminating respectively on both sides of the mons veneris, above both Poupart's ligaments, at the root of the penis and behind the left testis. Was able to keep those leading to the abdomen tightly plugged, but urine appeared through the two openings on the penis and behind the testis whenever he made any strong effort.

March 1. The large excavation on the abdomen slowly filling up, and contracting in its vertical diameter. Dressed with lint smeared with copiba. Left testis completely imbedded in granulations, and non-cicatrizing, the process being retarded by the urinary fistula behind it. Urine freely voided at will through the perineum, and also discharged from the urethra as well as before the accident.

April 1. The abdominal ulcer has almost closed. A minute fistulous opening remains on the left of the pubis, at which a drop or two of urine appears when an attempt is made to close the outlet in the perineum during micturition. The lost scrotum has been almost entirely replaced; the testis being drawn close up to the pubis, he suffers pain, from pressure upon it, in walking. Most of the urine is discharged through the perineum; a small interrupted stream passes by the meatus. On attempting to introduce a bougie, it left the urethra and emerged at the perineal opening. Continued the application of copiba to the raw surfaces, and bathed the genitals frequently with cold water.

15th. The fistula opening on the abdomen has finally closed. A thread-like stream of urine passes from the meatus; perineal fistula contracting. A bougie enters readily to the seat of obstruction, and then leaves the urethra, and passes, probably along the course of the original rupture, towards the posterior part of the left testis, or descends and appears at the perineum, forming an angle with the channel made by operation, by which most of the urine is voided, showing the existence of at least three fistulous communications around the seat of stricture. Directed him to take daily exercise, to continue frequent applications of cold water to the genitals, and, during micturition, to make pressure on the perineum, to direct the urine as much as possible into its natural course.

29th. All the ulcers have cicatrized. Bongies enter readily to the stricture and are there firmly resisted, those of small size leaving the urethra. The left testis has descended nearly two inches; penis held down by thickened integument. Applied ung. iodinii comp. along the course of the indurations.

May 15. Perineal fistula very small; a continuous stream the size of a fine needle passed by the urethra.

23d. Made a very long and careful, but unsuccessful attempt to introduce a No. 1 bougie into the urethra, inducing so much irritation of the canal, that the following day he was scarcely able to urinate at all.

June 8. Succeeded finally in introducing a No. 1 elastic bougie into the bladder; and before the close of the month, had dilated to No. 6. The outlet of the perineal fistula quickly closed, leaving a cul-de-sac internally, from which a few drops could be pressed after micturition.

July 15. Introduces a bougie himself twice a day; urinates without any difficulty; cannot walk far without suffering pain from pressure on the left testis, which hangs almost as low as its fellow; very little disfigurement of penis and scrotum, the various indurations having been mostly absorbed; integument movable upon the penis. An irregular narrow cicatrix, eighteen inches long, marks the closure of the abdominal sore.

31st. His inability to walk long distances unfitting him for the duties of a soldier, he requested his discharge from the marine corps, in order to accept a lucrative situation in a cotton-mill; and he was accordingly discharged, in compliance with his wish.

The past winter was of unusual severity, and many of the men, who after fatiguing guard-duty on the preceding day, trudged through two miles of deep snow to get to their favourite haunts of dissipation in Portsmouth, became seriously ill. About the time the case above narrated came under my charge, two others of retention of urine, occasioned by exposure to inclement weather, also reported to me. One of these suffered so much pain from inability to urinate, that he consulted an incompetent physician in Portsmouth, who, after an unsuccessful attempt to introduce a catheter, had him brought to the navy yard. He was admitted at night, distracted with pain—his bladder so distended, and blood issuing so freely from the urethra, in consequence of the injuries inflicted on it by the instrument, that I expected to have to operate in the morning, but succeeded, by large doses of opium and by constant application of hot flannel fomentations, in inducing sufficient relaxation to enable me to introduce a small catheter. The other man had a severe gonorrhœa when he left the barracks, and returned with a large abscess of the penis, which completely closed the urethra, and when opened, discharged a considerable quantity of pus and urine, leaving a urinary fistula, which required an operation before it closed. When Private T. returned to the hospital, he did not appear much worse than when he went out. I knew nothing of his having been drinking, and was not aware that he had ruptured his urethra by his attempt to introduce a bougie, until the 23d instant, the third day after I had punctured his bladder. He had passed so much urine on the 19th and 20th, that I attributed the increased pain, ardor urinæ, and swelling to inflammation induced by his imprudence in exceeding his leave of absence on the 10th. He was so much relieved on the evening of the 20th by the incisions and local applications, that I had no reason to apprehend the necessity for an operation. During the night he rapidly became worse—and when I next saw him, at my regular morning visit at ten o'clock on the 21st, I at once made preparations for opening the bladder. His case is remarkable for the extent of surface destroyed by sloughing, and for the admirable manner in which reparation was effected. Within five weeks after its entire exposure, the testis had been imbedded in new tissue, and completely covered with cuticle, the new structure subsequently relaxing sufficiently to allow the gland to hang nearly as low as its fellow. The uninjured abdominal cuticle was gradually drawn, as granulation proceeded, towards the pubis and inguinal regions, until only a long narrow cicatrix was left to indicate the longitudinal extent of the parts destroyed. The small portion of the sheath of the penis which escaped destruction, formed a thick fold on the dorsum of the organ, but the patient objected to its removal by operation. His attack of variola was no doubt directly attributable to the use of a sheet or towel, which had been imperfectly cleansed after having been used by one of the other cases of that disease in a ward over head. While the sloughing and infrequent suppuration were going on, he consumed incredible amounts of eggs, milk, beef-essence, porter, brandy, etc., care being taken to administer them only as fast as they were removed from the stomach, and to maintain a regular and constant effect upon the pulse.

U. S. NAVY YARD, PORTSMOUTH, N. H., August 15, 1867.

Case of Intermittent Lateral Chorea (?) successfully treated by Bromide of Potassium. By JAS. P. HASSLER, M.D., of Cochranton, Pa.

I was asked, January 7, 1868, to prescribe for Mrs. H. T. P., a married lady, aged 50, living in the country. The case was reported to me as "the shakes," coming on about 4 P. M. daily. Without a very minute inquiry into the case, I apprehended I had something of a malarial character to deal with, and prescribed accordingly. January 10 I was asked to visit the patient, as she was no better. I did so, and found a very different condition of things from what I had anticipated. She had no chills, and the "shakes" were limited to one side of the body, and consisted of a violent trembling or jerking of the limbs on that side—the arm and hand, leg and foot, shaking as in the worst forms of paralysis agitans. These paroxysms occurred about four o'clock every afternoon, and continued two and three hours, and sometimes even longer. She complained of severe headache, limited also to the affected side, as having preceded and accompanied these peculiar manifestations. There was also some dimness of vision, and numbness of one side of the trunk, and coldness and numbness of the hand and foot. General health good up to time of seizure; patient had ceased to menstruate five years ago. She told me she had an attack precisely similar seven or eight years previously, which lasted between four and five months.

I prescribed ten grains of bromide of potassium every six hours. The next day she had a merely perceptible trembling at the usual hour. January 12, no sign of the paroxysm, though the headache, dimness of vision, numbness, and coldness still remained. A continuance of the bromide for two weeks removed all the symptoms, and restored the patient to usual health.

On Treatment of Pertussis. By W. D. MARTIN, M.D., of Mina, Chautauque County, N. Y.

On reading the account of the treatment of out-patients for whooping-cough in various London hospitals, as reported by the *Lancet*, and copied into the *Medical News* for June, 1867, I was favourably impressed by the *modus operandi* of the remedy used at the St. Thomas Hospital, and having at the time two cases which yielded slowly and certainly to the measures employed as thus suggested, I determined, when a good opportunity should offer, to ascertain if the disease could thus be surely palliated.

Since that time an epidemic of pertussis, in our village and vicinity, brought to my notice a sufficient number of cases to give the treatment a fair commencing trial, and, with the exception of one instance, in which nitric acid was chiefly employed, the entire number in charge received the chloric ether treatment.

The disease, as it manifested itself, differed in no notable degree from its usual order of progression, although it seemed as if its characteristic symptoms were often inclined to appear from the outstart, and, in some who were attacked, the cough, aggravated by the cold winds which blow savagely over this elevated region, was suggestive of great distress.

The formula used is a solution of ammon. acet. f3ss, spt. nit. ether f3j, chloric ether f3ss, oxymel scillæ f3jss, syrup tolu f3ij, and aqua q. s. for f3ij, of which f3ij every six hours were administered to a child of four years of age, and a liniment composed of chloroform one part and olive oil two parts rubbed on the chest, over the scapular region, and on the back of the neck, morning and evening. Ordinary preliminary treatment and common hygienic rules were laid down for observance.

I will state that in the cases in which I have used chloric ether the effect has been to modify the cough gradually and surely. Sometimes the steady exhibition of the medicine for days together gave no encouraging sign of improvement except to the eye of the professional visitor; but the main object, the early termination of the disease, was apparently always happily accomplished.

Towards convalescence, small doses of fluid extract of hyoscyamus or liq. morph. sulph. were employed in combination instead of chloric ether, and no notable cough lingered in any case.

Explanation. By Dr. W. P. MOON.—My attention has been directed to the remarks, following Case IV., at the top of page 62 in the January No. of this Journal, in which I have inadvertently, and unintentionally, used the plural pronoun, whilst, in the other cases, the singular is used.

I did not intend to have it inferred, as some have supposed, that any of my colleagues had conferred with me in reference to that article. Had they done so, their names would have appeared. The reflections above alluded to are wholly my own, and I wish it to be so distinctly understood.

As I have been led to dwell upon the case, it has occurred to me that it would not have been bad surgery to have placed a ligature around the base of the tumour, at the outset of the venous hemorrhage, as a means of arresting it and giving a better chance to remove the mass.

PHILADELPHIA, 102 N. 15th Street.

DOMESTIC SUMMARY.

Chloroform in Intermittent Fever.—Dr. D. SCOTT, of Bellefontaine, Iowa, has administered chloroform, in intermittent fever, as first recommended by Dr. E. McClellan, in the No. of this Journal for July, 1866 (pp. 271-4), and April, 1867 (pp. 370-6), and he states (*Chicago Medical Journal*, Feb. 1868) that he has carefully noted its effect in upwards of fifty cases, with the following results: "In twenty cases, after the administration of one fluidrachm each, the chill was immediately arrested, with the exception of one case, in which the above dose was repeated in one hour; in eleven of the above cases, the febrile stage was probably abridged; of the remaining cases, the fever ran about as usual, all, with few exceptions, terminating in profuse perspiration; in eight of the cases, the paroxysm returned on the succeeding day, and nine on the second day, and three escaped, but were subsequently attacked in from seven to twenty days: of the remaining cases, no reliance was placed in the curative properties of the chloroform (which I only administered for the purpose of abridging the chill), but was followed by large doses of sulph. quiniæ as soon as the sweating stage was established." In conclusion Dr. S. says that chloroform is a valuable and safe hypnotic in the dose of one fluidrachm, in the cold stage of intermittent fever, and never fails to arrest the chill, the patient falling into a refreshing slumber as described by Dr. McClellan. Dr. S. administered it, like Dr. McClellan, undiluted.

Enlargement of all the Lymphatic Glands.—(Hodgkin's Disease). At page 383 of the present number will be found an interesting case of this, reported by Dr. John J. Black. We find another recorded by Dr. WM. CARSON, in our esteemed contemporary, the *Western Journal of Medicine* (Feb. 1868), and which we quote as an interesting contribution to our knowledge of this affection.

The subject of it was a woman twenty-eight years of age; unmarried, very pale, thin, and feeble, and having the physiognomy of protracted illness. Limbs wasted, breasts hard and disproportionately full, abdomen prominent and tolerably tense. Superficial, uneven and nodulated enlargements or tumours, hard and painless, were to be felt everywhere over the surface of the abdomen, and were evidently enlarged lymphatics. They were more numerous above the

pubis, between the breasts, and towards the axillæ. The mammary glands were also affected by the same deposit. Each nodule was readily defined, the skin was movable over it, and not discoloured. During her early stay in the hospital, and before the effusion into the abdomen became too large, uneven and hard masses were to be felt within the abdominal cavity. They were larger than those on the surface, and grew rapidly. The glands of the neck were also enlarged, but not to the same extent as in the other regions.

The history that she gave of herself was, that she had enjoyed ordinary health until about two months since, when she noticed some changes in her breasts, and the beginning of the small, tumour-like swellings over the lower chest and abdomen. Pains in the abdomen were occasionally felt, and the abdomen began to enlarge, both on account of the irregular and hard growths, and on account of some effusion. Her strength began to fail rapidly, and she had been confined to her bed two weeks before her admission into the hospital.

"The treatment was determined by the two most obvious facts in the case: first, the general cachectic condition and the progressing disease in the abdomen, or rather the secondary effects of it, in producing dropsy. The prognosis was certainly fatal, and probably within a short period. Tonics of various kinds and diuretics were used without effect. Evidences of the implication of the thoracic organs began to appear, in cough with mucous expectoration, and some dulness in the percussion sound of the chest, in limited portions both anteriorly and posteriorly. There was no acute pain, and no great disturbance of the respiratory act. The heart acted feebly but regularly, and without abnormal sound.

"She rapidly sank within three weeks from the time of her entrance into the hospital. The duration of her case, counting from her date of the beginning of her troubles, was about ten or twelve weeks.

"The *post-mortem* examination showed, beginning with the thorax—externally as we have before said—nodulated masses on the surface between the breasts, in the mammæ and in the axillæ, each distinct, and of sizes from an almond to a walnut, with the skin movable over them. The lymphatics of the neck were enlarged. In the cavity of the thorax there were nodules scattered over the costal and pulmonary pleura, of varying size, some quite large. In the parenchyma of the lung were the same, with more tendency to infiltration. The pericardium, also had a few. There was slight effusion into the pleural cavities. The heart was healthy. In the abdominal cavity not a single organ escaped. The liver was particularly affected, and contained numerous irregular masses of the same hard, cartilaginous substance, both on its surfaces and in its substance. The spleen was less affected than the liver, and the stomach still less. In the lumbar regions the masses were enormous. The uterus could scarcely be distinguished, and the pelvis was filled with the masses. The mesenteric glands were much enlarged, and the mesentery was almost a solid mass.

"The morbid growths cut with a hard, gristly feel, with rather a dry surface, and had the physical and microscopical appearances of scirrhus. We regret to say we did not make a thorough examination of the enlarged lymphatics."

A Dead Fetus carried to Full Term.—Dr. MARKOE exhibited to the New York Pathological Society a still-born and shrivelled fœtus, which was discharged at full term. About the first of January the mother conceived, and went on prosperously until the latter part of May (she being at that time a little past the middle of the pregnancy, and having for several weeks previously felt the motions of the child)—when she was pitched out of her wagon while riding in the country. Although she did not suffer any serious bodily injuries, she was greatly shocked and not a little alarmed; and from that moment did not feel any more motion, all her former symptoms of pregnancy ceasing.

At the end of seven or eight weeks after, she consulted Dr. M., who found her in the enjoyment of perfect health, her abdomen having dwindled down very much, and there being unquestionable evidence of a dead fœtus within her. The os was found large and patulous, but no further examination was made *per vaginam*. Her condition being so excellent, Dr. M. expressed the probability to her that she would go on until full term, when the ovum would be discharged.

About the first of October, having then completed her precise time, she was rather suddenly attacked with severe pain, which lasted but a short time, when the child, with membranes entire, was discharged together. There was no hemorrhage at the time, although a month afterward, when she menstruated, she had a rather violent and continuous flow of blood. The fœtus was as perfectly formed as any child at five months, and only showed the effects of being blighted at that stage of its growth, and subsequently retained so long a time in the uterus.

Dr. POST stated that he had a case precisely similar to the one related by Dr. Markoe. In his patient it was also a dry birth, all the membranes coming away together.

Dr. SAYRE had also met with a case of the sort about ten years ago. The death of the child took place at the third month, but the mother went on to her full period. The labour was a dry one.—*Medical Record*, March 2, 1868.

Dead Fœtus retained till Full Term.—Dr. S. D. MERCER, of Omaha, Neb., records (*The Chicago Med. Examiner*, Oct. 1867) the case of a healthy woman who after hard work, when seven months and ten days advanced in pregnancy, ceased to feel the movements of her child, and was convinced it had ceased to live. She was subsequently delivered at full term of a dead fœtus.

"The child was evidently," says Dr. M. "one of seven months' growth. Sutures were not united, and this rendered the labour very easy. The pains came on very frequent, but were light. The waters were discharged copiously a few minutes before the labor was completed. There was considerable decomposition of the cuticle of the child, but not enough to cause any unnatural odour. The placenta came away very easily. It was small and partially decomposed on the surface that was attached to the womb. There was considerable fatty degeneration of the cord. The mother had a very good getting up, with no untoward symptoms, except an unusual discharge of the lochia, and a subsequent purulent discharge, which has not entirely ceased yet."

[Cases of an early blighted fœtus (both in single and twin conceptions) retained until an advanced period, or even until full term, are by no means rare, and quite a number have been recorded in this Journal, as will be seen by reference to No. for Feb. 1828, p. 480; Feb. 1830, p. 483 (two cases); Feb. 1836, p. 347; Aug. 1837, p. 535; April, 1867, p. 557; present No. p. 550, etc.—ED.]

Treatment of Inflammation of the Limbs by the Compression or Ligature of their Main Arterial Trunk.—The *Cincinnati Lancet and Observer* for February, 1868, contains an interesting article on this subject, by GEO. C. BLACKMAN, M. D., Professor of Surgery in the Medical College of Ohio, the object of which is to contribute something towards the history of this method of treatment, and to exhibit the result in the hands of American surgeons. Prof. B. states that he has "been unable to find the report of any case in which the femoral artery was ligated as a remedy for a wound of the knee-joint, prior to that in which the operation was performed by Henry U. Onderdonk, M. D., on June 17, 1813. The patient was cured, and the case was reported in the *American Medical and Philosophical Register*, vol. iv., 1814, p. 176. A similar operation was performed by David L. Rogers, M. D., of New York, and is reported in his paper 'On the Utility of Tying Large Arteries in preventing Inflammation in Wounds of the principal Joints, with Cases,' in the *New York Medical and Physical Journal*, vol. iii., 1824."

Dr. Rogers, in addition to his own cases, refers to one of compound dislocation of the ankle, in which Dr. Mott ligated the femoral artery. Trismus supervened on the seventh day from the accident (the wound till then doing well), and the patient died. Dr. R. gives the particulars of two other cases which, in his opinion, go to prove that the danger of mortification from defect of circulation is less than might be supposed.

"In July, 1863," Prof. B. says, "after the great battle in front of Richmond, and the retreat of the Union army to Harrison's Landing, on the James River, we had the pleasure of meeting Dr. Rogers at General McClellan's headquarters, and among the first surgical cases reported to us there was one in which the

femoral artery had been successfully ligated by him, or at his suggestion, for a gunshot wound of the knee-joint, and he was warmly advocating the operation in the treatment of such cases.

“Dr. Daniel F. Wright read a paper on the ‘Therapeutic Effects of the Ligation of Large Arteries’ before the Montgomery County (Tenn.) Medical Society, January 8, 1866, which was published in the *Richmond (Va.) Medical Journal*, April, 1866. Dr. Wright states that his attention was first specially directed to the influence upon the pathological conditions of a part exercised by ligating its principal artery in consequence of certain opinions which had been advanced by Dr. H. F. Campbell, of Georgia, who, early in the history of the war, had been placed in charge of the hospitals for Georgia volunteers, established in Richmond, Va. These were afterwards embodied in a work on military surgery, by Dr. Campbell, and which was published under the auspices of the Surgeon General of the insurgent States. Dr. Wright, however, remarks that as Dr. C.’s views are only incidentally mentioned in that work, he should not have appreciated their importance had he not heard him *viva voce* on the same subject. Dr. W. gives the following synopsis of what he, as well as Dr. Campbell, erroneously supposed to be a ‘new doctrine:’ that the ligation of the principal artery of a member, which is ordinarily supposed to occasion gangrene and necrosis in the parts supplied by the occluded artery, has, on the contrary, a marked therapeutic influence, not only upon tumefaction and unhealthy discharges, but in arresting gangrene and promoting the healing process. He adds that Dr. Campbell supports his doctrine by the history of six cases, for the particulars of which he refers to the work in question. Dr. Wright had at length an opportunity of making his own observations, as he was placed in charge of the second division of Winder Hospital, in Richmond, ‘the largest establishment of the kind in the late Confederate States.’ He then gives a detailed statement of three out of five cases, which, he says, are typical of the others, and ‘confirmatory’ of the six cases reported by Dr. Campbell.”

In the five cases witnessed by Dr. Wright, he says, “and in the six cases reported by Dr. Campbell, we have this one uniform result, that immediately, from the date of ligation, large tumefaction has been superseded by recovery of the original contour, fetid ichorous discharges by laudable suppuration, and phagedenic gangrene by vigorous granulations, resulting in rapid separation of the eroded tissues.”

Prof. B. quotes the following case reported by Dr. D. L. Duvall, of Kentucky, in the *Cincinnati Journal of Medicine*, May, 1866:—

“After the battle of Chickamauga, September 19, 1863, a soldier received a gunshot wound through the left leg. Ten days after the injury, profuse hemorrhage ensued from the wound, with intense swelling. A watery discharge issued from the orifice, and the cuticle was of a deep, almost purple colour, indicating extensive congestion, inflammation, and extravasation. I adopted Guthrie’s mode of procedure, following the track of the wound until the orifice of the bleeding vessel came in view, which proved to be the peroneal artery close to its origin, so close as to preclude the idea of ligating the wounded vessel, thus necessitating the tying of the posterior tibial above the seat of lesion. The surgeon who assisted me was confident, from the condition of the limb and the cutting off of this source of supply, that mortification would follow, and the final result would be amputation of the limb. But, to our surprise, on the third day after the operation the swelling had almost subsided, healthy pus being discharged from the wound, while the cuticle assumed nearly its natural colour, and in ten days more (twenty from date of injury) the patient had so far improved that he was able to be removed to the general hospital, at Richmond, Virginia. How this case terminated, I had no means of ascertaining; but from the favourable condition in which he left the field hospital, I am inclined to believe that speedy recovery followed.”

Prof. B. expresses his unwillingness to discuss the value of this method of treatment, but states that he would feel reluctant to resort to the ligature, believing it to be a very serious operation, notwithstanding the extraordinary results obtained by the late Dr. Mott and Prof. Syme; and refers, in support of his views, to Mr. Bryant’s tables in Holmes’s *System of Surgery*, to Dr. Norris’s

statistics published in this Journal for October, 1849, and, finally, to Circular No. 6, Surgeon-General's Office, as showing the very serious character of the operation for ligating the femoral artery.

Abscess in the Appendix Vermiformis.—In our No. for July, 1867, p. 285, we noticed a case of this in which Dr. WILLARD PARKER, of New York, opened the abscess by an incision, and the patient recovered. About two years subsequently the patient died from another affection, and Dr. G. H. WYNKOOP reports (*The Medical Record*, March 2, 1868) the following appearances as observed on autopsy.

"The appendix was attached by strong adhesions to the anterior abdominal wall, at about the external limit of the right inguinal region. The cæcum was also pretty firmly bound to the wall of the abdomen and iliac fossa by adhesions. The appendix was given off from the cæcum normally, and was four inches in length. It did not lie curled upon itself, but was stretched out along the cæcum and strongly adherent to it. The point of attachment to the abdominal wall was an inch to the right side of, and a little below the cicatrix of the former incisions. The contents of the abscess, therefore, must have worked their way for an inch or more between the abdominal muscles, before they showed any inclination to point. The parts being now removed and examined more in detail, it was found that the entire free surface (that which was attached to the abdominal wall) of the appendix was covered with a thick wall of false membrane which was thickest at about its middle portion. At this point also, the appendix presented a tubular dilatation. Upon dissecting off this false membrane, the appendix beneath presented nothing abnormal in appearance until the point of dilatation was reached. Here was found to be no true wall, the muscular and mucous coats being entirely absent. This dilatation extended three-fourths of an inch down the canal, and that portion of it which was without a true wall was probably one-fourth of an inch in length. Below the dilatation the appendix was normal as to its coats. On opening now the cavity of its canal, it was found to be pervious for two inches and a quarter. From this point for a quarter of an inch, it was entirely occluded, when it was opened again into the dilatation spoken of above. The cavity of the dilatation was filled with a brown mucous secretion. The canal again became obliterated half an inch from the free extremity of the appendix, which from this point was converted into a solid cord.

"That portion of its wall which was attached to the cæcum was normal as to its coats.

"This specimen illustrates most perfectly the *preservative* efforts of nature. It is a full confirmation of the theories advanced in the paper above referred to. Undoubtedly the calculus which escaped when Dr. Parker operated was the exciting cause of the difficulty. By it, inflammation, first of the mucous, then of the muscular, and finally of the serous coats of the appendix, was induced. The inflammation of the two inner coats went on to ulceration and destruction of their substance, and was limited in its extent; while that of the serous coat involved a greater area, and terminated in the effusion of plastic lymph, which glued not only the appendix, but also a large portion of the cæcum to the abdominal wall.

"Furthermore, this effusion of plastic material was not designed for a temporary purpose simply, but having accomplished its end in keeping the contents of the abscess out of the peritoneal cavity, it was destined to remain as a lasting wall for the breach of substance made by the ulceration and destruction of the part."

Excision of the Entire Clavicle.—Dr. W. W. DAWSON, Surgeon to the Commercial Hospital, Cincinnati, Ohio, records (*Cincinnati Lancet and Observer*, Jan. 1868) a case of a man twenty years of age, the whole of whose right clavicle was necrosed. Dr. D. made an incision over and down to the bone, and excised it. He found on the outer surface of the first rib a small point of caries, which he also removed with the chisel. The wound slowly healed, and forty-six days after the operation had entirely closed.

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WAR DEPARTMENT,

SURGEON-GENERAL'S OFFICE,

Washington, D. C., March 2, 1868.

ADVERTISEMENT.

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Applicants must be between 21 and 30 years of age, physically sound, and graduates of a regular medical college.

Applications for permission to appear before the Board should be addressed to the Surgeon-General U. S. Army, and must state the full name, residence, and date and place of birth of the candidate.

Testimonials as to character and qualifications must be furnished. If the applicant has been in the medical service of the Army during the late War, the fact should be stated, together with his former rank, and date and place of service, and testimonials from officers with whom he has served should also be forwarded.

No allowance is made for the expenses of persons undergoing examination, as it is an indispensable prerequisite to appointment.

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Visceral and Surgical Anatomy	" W. H. PANCOAST.
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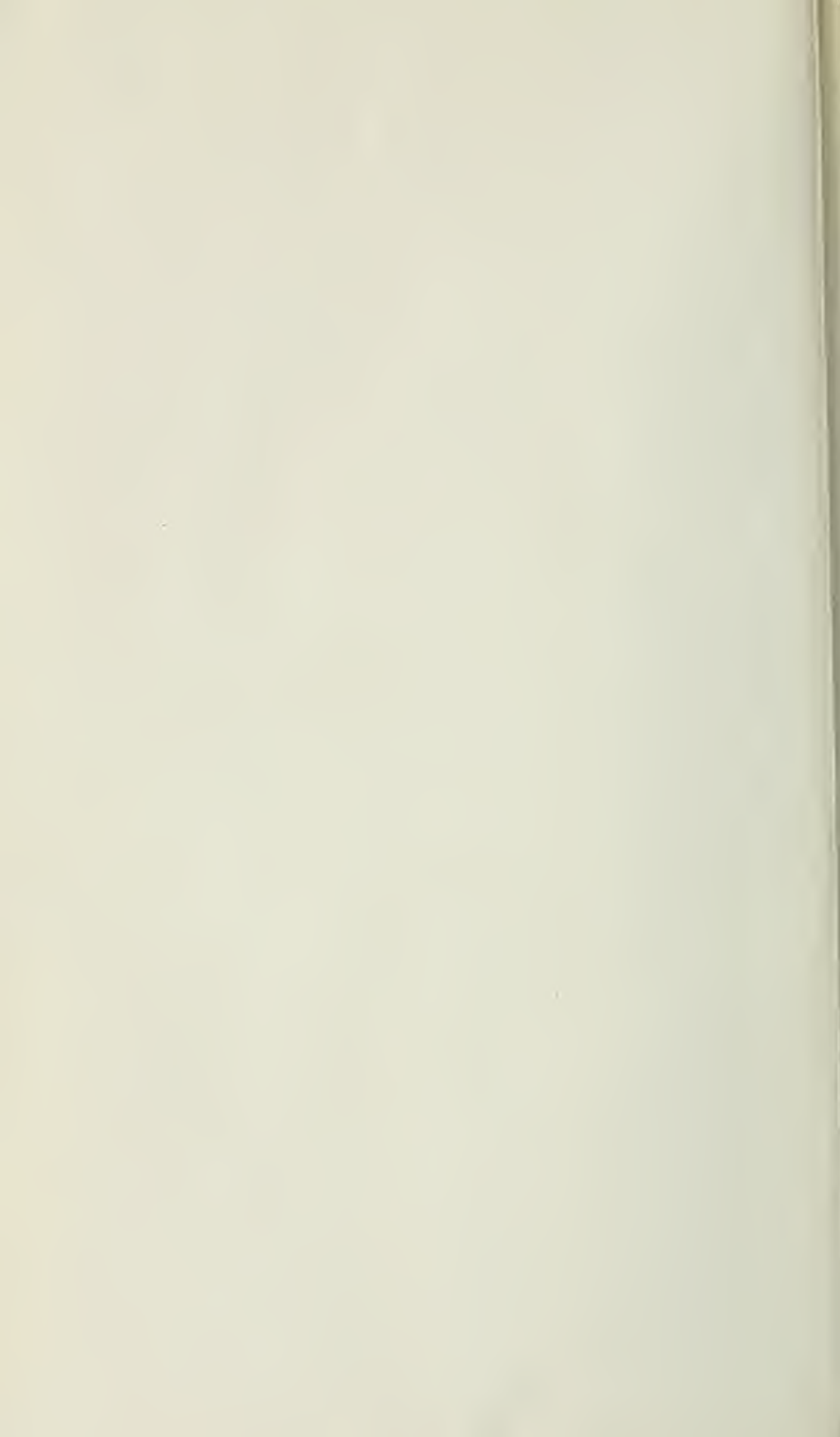
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